



FINAL REPORT
NON-TRADITIONAL AGRICULTURAL EXPORT SUPPORT
PROJECT

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From the October 1986 inception of the Non-traditional Agricultural Export Support Project until mid-April of 1988, I had the opportunity to serve as Project Supervisor for PROEXAG, working out of Chemonics' home office in Washington, DC. Starting that same month of April 1988 and running through the end of the project in September of 1991, I had the privilege of serving as Team Leader, working out of the PROEXAG office in Guatemala City.

The accomplishments described in this report derive from the combined effort of an extraordinary team of professionals. I am especially grateful to have worked closely with Bruce Brower in the areas of information management and computer utilization, Ricardo Frohmader in marketing, John Guy Smith in postharvest handling, Dale Krigsvold in pest and disease management, Jose Mondonedo in production, and Jose Oromi in training administration. All of us would like to join together in thanking our very able technical assistants--Sean McSweeney, Pedro Echeverria, Jorge Villatoro, Fernando Siles, Estuardo Castro and Lucia Solis--for their dedication and hard work.

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As with most development projects, we the implementers of PROEXAG had to learn through experience what worked best in the particular context we faced, and had to adjust strategy and tactics over time. Our ability to make mid-course corrections was directly dependent on the goodwill and understanding of project management staff within USAID/ROCAP. The PROEXAG team is therefore very grateful to Ron Curtis and Rick Clark, and earlier on to Gordie Straub and Nancy Fong, for allowing us the flexibility and freedom of action needed to make a meaningful contribution to export growth in Central America. And we would also like to recognize the support and leadership consistently provided by USAID/ROCAP Directors Nadine Hogan and Irene Castillo.

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PROEXAG was a very complex project, covering as many as seven countries at one time. We collaborated with many different counterpart entities, including four export federations, three development foundations, several research institutes, about 15 crop associations plus hundreds of growers, shippers and receivers. Credit for the export growth described in this report really should go to all of the people with whom we worked--especially to those who are "in the business"--rather than to a development project like PROEXAG. Nonetheless, I and the rest of the PROEXAG team would like to take this last opportunity to thank our many clients and friends in the industry for soliciting, listening to, and often applying our advice. We hope they feel that they benefitted from our involvement.

PREFACE

The measure of any export promotion effort is whether the people directly involved in producing and exporting earn a profit and remain in the business over time.

For a development project such as PROEXAG, which worked not only directly with grower/shippers but also indirectly through their crop associations and export support entities, equally important indicators of success are whether the capacity of those entities to provide essential services improved over time and whether those organizations moved toward greater self-sufficiency.

The objective of this report is to describe what occurred under the Non-Traditional Agricultural Export Support Project in Central America from 1986 to 1991, to provide readers with the information they need in order to form a judgment about whether we succeeded or not against these criteria.

SECTION I

INTRODUCTION

A. THE GOAL OF THE PROJECT

The goal of the Non-traditional Agricultural Export Support (NTAES) Project, which came to be more commonly known as PROEXAG, was defined in the Project Paper as follows: "to contribute to long-term economic growth through the expansion of nontraditional agricultural exports from Central America and Panama".

B. THE ORIGINS OF THE PROJECT

PROEXAG had its origins in three inter-related sets of circumstances: (1) the failure within Central America during the late 1970s and early 1980s of economic development strategies adopted in earlier years; (2) the promulgation by the United States of policies and legislation that aimed to promote export-led growth in Central American countries and elsewhere; and (3) major shifts in supply and demand patterns for horticultural products in markets potentially accessible to Central American producers.

1. The Failure of Economic Policy Built On Regional Integration and Import Substitution

The integration of Guatemala, El Salvador, Costa Rica and Nicaragua (Honduras did not sign the agreement and Panama was excluded) under a Central American Common Market from 1964 onward was characterized by the virtual elimination of internal tariffs and the imposition of a common system of external tariffs. Over the next decade, this program led to increases in intra-regional trade as high as 30%/year as well as substantial growth in per capita GDP. But at the same time, it promoted investment in import-substitution industries that could not compete in the world economy, institutionalized an anti-export bias, and created disincentives for agriculture that limited food production and accelerated rural-to-urban migration.

During the 1970s, a continuation of similar policies fueled economic growth in most of the Central American countries. From 1971 to 1980, for example, Guatemala and Honduras both achieved average annual increases in real Gross Domestic Product of 5.7%, while Costa Rica achieved an average of 5.4%/year and Panama achieved an average of 5.1%/year.

However, this growth did not derive from the broad-based development needed to withstand serious internal pressures and external forces. Glaring inequities in income and wealth between rich and poor increased dramatically in El Salvador and Nicaragua during this period, and pressure on scarce natural resources also increased throughout the region, especially in El Salvador. In the case of these two countries, the result was civil war, which largely explains why El Salvador's average annual increase in real GDP during the decade of the Seventies was just 2.6%, while Nicaragua's fell to -0.1%. But several other countries also suffered from internal turmoil, as shown by

the insurgency in Guatemala and the rise of a tyrannical dictatorship in Panama. And by the end of the decade all of the countries in Central America were reeling from a series of external shocks: the oil crises of 1974 and 1979, rapid worldwide inflation, deterioration in the terms of trade for traditional export commodities, and periodic recessions in target markets.

2. U.S. Policy and Legislative Initiatives Aimed at Promoting Export-Led Growth

In 1982 the United States responded to the deteriorating economic situation in Central America and the Caribbean with the Caribbean Basin Initiative, whose intent was to promote trade, aid and investment. In August of 1983, the CBI Initiative was formalized through the Caribbean Basin Economic Recovery Act, which sought to enhance the economic and political stability of 27 countries within the region by giving them duty-free access to U.S. markets for a 12-year period beginning in 1984.

In subsequent years, the U.S. Agency for International Development sought to reinforce and help realize these objectives by allocating substantial foreign aid resources to a number of bilateral and regional programs aimed at encouraging macro-economic reform, creating a positive export environment, establishing appropriate support institutions, and ensuring that interested businesses had access to whatever financial and technical assistance they needed to penetrate new markets.

Although many of these programs and projects helped lay the foundation necessary for export growth, experience gained during the first several years (1984-1986) after the CBI Initiative took effect demonstrated quite clearly that very specific knowledge of markets and technology was a prerequisite for enterprises to become competitive and expand their position in foreign markets.

Since there were various sectors in which the CBI countries could theoretically be competitive--e.g. textiles, garments, electronics, light industry, horticulture--and each sector was complex, it became evident early on that mechanisms had to be developed to capture and make available scarce expertise in the most promising sectors in a cost-effective way. PROEXAG was designed to serve as such a mechanism for the horticultural export sector in Central America.

3. Shifts in Supply/Demand Patterns for Horticultural Products

Even before the PROEXAG project was designed in early 1986, high-value horticultural products had been identified as one of the most promising sectors for attention under the CBI Initiative for the reasons listed below:

- Per capita consumption of horticultural products was rising in the U.S. and other target countries as individuals climbed up the food chain to higher value items, as health consciousness rose, and as the population aged
- Population growth in most of the target countries was reinforcing these trends, leading to an increase in total consumption of horticultural products

- Supermarkets had begun to realize that horticultural products are among their most profitable products, and were exerting pressure to obtain year-round supplies of consistent quantity and quality
- Wholesalers and distributors in turn were putting pressure on their suppliers to provide such a supply
- Domestic producers were looking to expand their supply to minimize seasonality and maintain client relationships
- Domestic producers had begun to investigate off-shore sourcing for frost protection and to lower costs in response to the rising cost or scarcity of land, labor and water, as well as onerous work, environmental and pesticide regulations
- The sector was diverse and fragmented, with relatively low financial and technological barriers to entry
- The import share of total supply had already begun to rise
- CBI treatment gave the region another comparative advantage as compared with Mexico
- Horticulture would make good use of some of Central America's most important natural endowments--land, soils and climate
- Horticulture is generally labor-intensive and has a high local value-added
- Initial experiences by lead entrepreneurs in crops such as melons, pineapple and cucumbers had generally been favorable

As this report will demonstrate, these same traits and trends within the horticultural sector persisted through the period of implementation of PROEXAG, facilitating successful execution of the project.

C. THE CHANGING CENTRAL AMERICAN CONTEXT

Export promotion projects are affected and usually constrained by the political, economic and social context in which they are carried out, even though the projects generally have little or no control over those aspects of their environment.

In the case of Central America, some of the historical events that occurred during PROEXAG's project life (October 1986 to September 1991) were so significant that it is important to review them briefly and note their impact on the project.

1. The Political Environment

PROEXAG was originally designed to work in five countries (Guatemala, Honduras, Costa Rica, El Salvador, and Panama), with Belize to be added sometime after the first year of implementation.

By mutual agreement, however, even after Belize was added, at about the mid-point of the project lifespan, activities were limited to work in marketing information.

Moreover, in the case of Panama, PROEXAG involvement was sporadic at best. Our first year's work, for example, was lost entirely in December of 1987, when the United States withdrew all foreign aid. And although General Noriega was removed from power in December of 1989, PROEXAG was not

allowed to resume work in Panama until July of 1990. Even after that, country clearance was often difficult to obtain due to continuing uncertainty about USAID/Panama's overall role, strategy and specific programs. And for extended periods Congressionally-mandated restrictions such as Clause 620Q and the Brooke-Alexander Amendment that were invoked because of Panama's arrears in debt payments made it impossible to gather momentum and maintain continuity.

Similarly, in the case of El Salvador, country clearance could not be obtained for intermittent periods throughout the project, and in fact all routine travel was suspended from mid-November of 1989 to mid-March of 1990 due to the Civil War. As of this writing, however, the peace process seems to be progressing well, and we hope to resume providing technical services on a regular basis to El Salvador under the PROEXAG follow-on project (EXITOS).

On a more positive note, Nicaragua was added to the PROEXAG mandate in July of 1990. Despite continuing political uncertainty in that country, the project was able to give a jumpstart to the NTAE industry for the 1990/1991 winter produce season, enabling them to begin exporting melons and other NTAE crops just six months after the lifting of the U.S. embargo.

Finally, the Gulf War should be mentioned as a significant event for the PROEXAG project, because it caused a suspension of travel authorization to all Central American countries from mid-January to mid-March of 1991, and also because it depressed the demand in target markets for virtually all non-traditional export crops produced in the region.

In sum, the political environment in the region, and indeed in the world at large, did adversely affect project activities at various times over the five-year life of project, and it also affected the growers, shippers, and export support organizations with which we worked.

By the end of the project, however, the overall situation had begun to improve. As client countries moved toward democracy and peace, our work in export promotion became easier.

2. The Economic Environment

The economic environment prevalent throughout our project also had a significant impact on PROEXAG's technical support activities, not to mention on the business activities of our various clients.

While the specific circumstances varied by country, overall the region was characterized through most of the project's lifespan by little or no real economic growth, high inflation, high unemployment, and heavy reliance on external donor support. At the worst extreme was Nicaragua, but El Salvador was also ravaged by the effects of civil war, Honduras was affected by the struggles of its neighbors, Panama remained saddled with heavy foreign debt, Guatemala went through a period of sudden inflation, and Costa Rica had to cope with high inflation and high consumption. Moreover, all six countries suffered from a long-term decline in world coffee, cotton and sugar prices.

During PROEXAG's lifespan, all countries within the region chose to respond to these problems at varying times with major austerity programs.

These programs typically included tighter credit, managed exchange rates, strict control over public expenditures, and attempts to reduce the civil bureaucracy and privatize state enterprises.

Simultaneously, recognizing that their earlier policies aimed at promoting growth through import substitution would no longer work in the face of worldwide economic liberalization and global competition, all countries within the region moved toward more open economies by phasing out protective tariffs, reducing or removing numerical quotas, eliminating non-tariff trade barriers, reducing subsidies, streamlining administrative procedures, and investing in export-oriented infrastructure.

As of the close of PROEXAG in 1991, although the economic panorama across Central America was still difficult, it was gradually improving in all countries thanks to these measures.

In Costa Rica, for example, non-traditional exports surpassed traditional exports in value for the first time in 1990, and overall exports rose 10 percent in 1991 to a level of \$1.5 billion. On the other hand, Costa Rica's inflation rate in 1991 was still running at more than 26 percent, foreign debt was \$3.85 billion, and real GDP fell 2 percent.

After going through a very difficult period of rapid inflation and drastic devaluations, Guatemala was also able to re-stabilize its economy and achieve a 2 percent increase in real GDP by 1991. Again, non-traditional exports made a substantial contribution to the recovery, forming a rising percentage of the country's overall exports (\$1.245 billion in 1991). But Guatemala's inflation rate at the close of PROEXAG was still about 25 percent, and its foreign debt stood at \$2.7 billion.

Honduras exported about \$925 million in 1991, but its real GDP fell 1.9%, its inflation rate was 33 percent, and its foreign debt was at a level of \$3.15 million, which was higher than that of Guatemala in absolute terms and higher than that of El Salvador in per capita terms.

Despite the Civil War, in 1991 El Salvador was able to achieve a 3 percent increase in real GDP, hold inflation to 14 percent, export \$620 million in goods and services, and end the year with a foreign debt of \$ 2.165 billion.

On the road to recovery since 1989, Panama was the big winner in 1991, with a 9 percent growth in GDP, exports of \$3.99 billion and inflation kept down to about 3 percent. Yet at the same time Panama continued to struggle with \$5.85 billion in foreign debt.

Finally, although Nicaragua began to recover in 1991, achieving \$290 million in exports, its real GDP fell 0.4%, it experienced almost uncontrollable inflation of 1,133 percent, and ended the year owing \$8.57 billion in foreign debt even after more than \$1 billion had been forgiven by donors and other creditors.

3. Integration and Trade

Movement toward more open economies and export-led growth strategies within the region was reinforced by various important bilateral and supra-regional trade initiatives and agreements that were either announced or reached closure during the 1986-1991 period.

- The Enterprise for the Americas Initiative was introduced in June of 1990 as a vision for promoting economic growth in the entire hemisphere through increased trade and investment, spurred on by enhanced market access, financial and technical resources and debt reduction
- CBI II was signed in August, 1990, thereby making duty-free treatment virtually permanent and extending coverage to many new commodities
- Although four years of negotiations under the Uruguay Round of GATT talks ended in a stalemate in 1990, Costa Rica and Guatemala elected to join the GATT in 1991, with the rest of the Central American countries expected to follow
- Building on the January 1989 establishment of the U.S.-Canada Free Trade Agreement, the U.S.-Mexico Free Trade Agreement was slated to be placed on "fast-track" status in early 1992, making paving the way for a possible North American Free Trade Agreement by 1993
- Fifteen bilateral Framework Agreements for Trade and Investment (including all of the Central American countries) had been signed by October of 1991
- The Andean Trade Preference Act was formalized in November 1991
- Chile negotiated a bilateral agreement with Mexico
- And finally, as 1992 approached, the world began to perceive as immanent the formation of a single European Community

Since all of these umbrella trade initiatives and specific agreements to some degree influenced the growth of non-traditional agricultural exports from Central America over the 1986-1991 period, they form an important part of the historical context of the project.

SECTION II

IMPLEMENTATION STRATEGY

A. INTERPRETATION AND CLARIFICATION OF THE PROJECT DESIGN

In order to achieve its broader objective of expanding non-traditional agricultural exports from Central America and Panama, PROEXAG was designed with a specific purpose:

"To create and/or strengthen private sector capabilities in the provision of hands-on training and technical assistance in skills related to production technologies and market intelligence for nontraditional agricultural exports"

As is often the case with new development projects, once project implementation got underway it became obvious that this apparently clear statement of purpose could be interpreted in various ways, depending on the point of view of the observer.

Since PROEXAG was designed to work throughout Central America with grower/exporters, producer associations, export support organizations, bilateral USAID missions and USAID/ROCAP--all of which had different and often divided opinions about what PROEXAG was all about--in fact it took considerable time and effort to reach a mutually acceptable interpretation.

The main issues to be faced were: (1) which segments or entities within the private sector should be treated as project clients or beneficiaries; (2) which "capabilities" should be strengthened or created; and (3) whether the areas of "production technologies and market intelligence" really covered the range of information and knowledge needed successfully to foment non-traditional agricultural exports.

Resolution of these tactical issues depended in part on resolving a larger strategic issue, which was whether PROEXAG should seek try to foment directly increased exports of NTAE crops by assisting individual enterprises or instead work indirectly, building the capacity of local organizations to provide such assistance.

On the one hand, proponents of "institution-building" argued that PROEXAG was an external, donor-funded project with a limited lifespan, so the best use of limited development resources was to build a self-sustaining local capacity to stimulate and nurture NTAE exports. That meant, in their view, strengthening local institutions, especially the export federations and export-oriented development foundations that had been designated as formal counterparts to PROEXAG:

- In Guatemala, the Guild of Non-traditional Products Exporters (GEXPRONT)
- In El Salvador, the Salvadoran Association of Non-traditional Producers and Exporters (ASPENT), which was later transformed into the Agricultural Diversification Division (DIVAGRO) of the Salvadoran

- Foundation for Economic and Social Development (FUSADES)
- In Costa Rica, the Private Agricultural and Agroindustrial Council (CAAP), which was later changed to the Agricultural Division (DIVAGRI) of the Coalition of National Development Initiatives (CINDE)
- In Honduras, the Federation of Agricultural and Agroindustrial Producer and Exporter Associations (FEPROEXAAH), subsequently simply FPX
- In Panama, first the National Council for Productivity (CONDEPRO), (which never really got started and eventually folded once AID withdrew from Panama) and from 1990 onward, the Guild of Non-traditional Exporters of Panama (GREXPAN)
- In Belize, Belize Agribusiness Company (BABCO)
- In Nicaragua from 1990 onward, the Nicaraguan Association of Producers and Exporters on Non-traditional Products (APENN)

On the other hand, proponents of "enterprise development" examined the results obtained thus far from first-generation, bilateral development projects working with FPX, FUSADES and CINDE, and concluded that these pioneering institutions had already grown in size and complexity out of proportion to the sectors they were set up to assist, and that institutional development was in danger of becoming an end in itself.

As the technical assistance team provided by Chemonics to implement PROEXAG began its work in late 1986, we did find considerable evidence that an excessively large export support organization tended to lose touch with its supposed constituency, to restrain rather than nurture entrepreneurial initiative, and to devote more effort to sustaining itself rather than to delivering essential services to client growers and exporters.

The team also looked for guidance from the history of the horticultural industry in the United States. Within the produce subsector, for example, we found that the two largest associations--the Produce Marketing Association and the United Fresh Fruit and Vegetable Association--both began long after the industry itself was well established and vibrant, and they both began small. The same pattern applied to other major subsectors such as frozen foods and cut flowers within the United States, and was also evident in the two Latin American countries that had become very successful in horticultural exports--Mexico and Chile. The PMA and the UFFVA in the United States, the UNPH in Mexico and the Association of Exporters in Chile did not cause the growth of their industries, rather they were born because of it.

This notwithstanding, our analysis did confirm the importance of horticultural producers and exporters having access to an institutional vehicle for expressing and addressing collective needs, channelling resources and services to individual businesses, and representing and defending the interests of the sector. So in the end we concluded that export support organizations could play a valuable role in Central America by virtue of their ability to nurture and guide the evolution of the nascent NTAE sector.

The final stance of the PROEXAG team, then, on the strategic issue of whether to emphasize institution-building or enterprise development, was to recommend to USAID/ROCAP that we devote most of our attention (i.e. about 80%) to targeted enterprises, as the most expeditious means of expanding the number of viable export-oriented businesses. Furthermore, we recommended

that our assistance at this level concentrate on transferring to clients the know-how they needed to identify and alleviate critical bottlenecks and to identify and pursue promising export opportunities.

However, at the same time we recommended providing limited (i.e. about 20% of project resources) assistance to designated counterpart institutions to more clearly define their role and do a better job at providing essential services to affiliated growers and shippers.

This approach was accepted in principle about one year into the project but not formally ratified until after the mid-project evaluation, through Project Manager's Letter #12, which clarified the statement of project purpose as follows:

"Private Sector" includes any private organization or individual with a role in non-traditional export agriculture, but with particular attention to "channel captains" (or likely candidates) and the export federations

"Create and/or strengthen capabilities" means assisting, facilitating, encouraging or instituting processes, relationships, knowledge or skills necessary to make non-traditional export agriculture from the region successful and self-sustaining.

"The provision of hands-on training and technical assistance" means direct training and technical assistance by the project to participants in non-traditional agriculture. It also means improving the capacity of export federations to do the same or access similar resources.

B. SELECTING PRIORITY PRODUCTS, MARKETS AND THEMES

Even as the somewhat theoretical issues discussed above were being resolved to everyone's satisfaction, the PROEXAG team had to resolve a number of operational issues, the most important of which was setting priorities, i.e. which NTAE products to emphasize in Central America, which markets to target, and which technological issues to address.

Crops, technologies, and markets are inter-related, which meant that prioritization had to be an iterative process. The process was also dynamic, requiring adjustment and change as we learned through execution, as goals were accomplished, as the industry itself evolved, and as counterpart organizations changed their own strategies.

1. Priority Products

Since the PROEXAG mandate covered the entire non-traditional agricultural sector, only coffee, cotton, sugar, basic food grains, livestock and meat products were automatically excluded from our field of interest from the very start. However, it was understood that bananas (except for plantains or specialty bananas) should also be excluded because of the dominance of multinational companies, and that all citrus products, soybeans and peanuts must be excluded as well due to legislative or policy restrictions on the use of AID funds.

Theoretically, the project could work anywhere else within the horticultural, forest product, mariculture or aquaculture subsectors of agriculture. In practice, however, forest products were never seriously considered because they fell beyond the technical competence of the core technical services team, were not receiving much emphasis from our counterpart organizations, and generally had too long a time horizon to meet the export goals of the project.

During the first year of PROEXAG, we did provide short-term consulting assistance in support of mariculture (e.g., shrimp farming) and aquaculture (e.g., tilapia, catfish, and trout farming) activities in several countries, but soon decided not to accept further requests for assistance. Again the main reasons were that the core team was not familiar with these businesses, more specialized sources of technical assistance were available, and separate bilateral projects were being developed within or for several counterpart entities to address these areas.

By the end of the first year, then, PROEXAG's product focus had narrowed to horticulture. Within horticulture, however, there are many segments, numerous crops, and various product forms for each crop, so further prioritization was necessary.

The major segments of horticulture are: (1) fruits, vegetables and their derivative products; (2) ornamental crops and their derivative products; (3) specialty crops and their derivative products; and (4) propagative materials. The latter segment was immediately discarded (except as an adjunct to other export businesses--a pineapple nursery, for example) because such businesses are very specialized and do not usually generate large export volumes. The specialty crop segment was also discarded because the industrial crops within it each have unique marketing systems and because specialty edible crops such as herbs and spices typically generate only small volumes.

That left two of the original four segments of horticulture as possible areas of activity. Considering the relative strengths of the core technical assistance team, the perceived need on the part of clients and counterpart entities, and the overall growth potential for Central America, we decided early on to allocate roughly 70% of the available resources to the fruit-and-vegetable segment, 20% to the ornamental crops segment, and the remainder to specialty crops or other targets of opportunity.

Within the fruit-and-vegetable segment, the two main industries are fresh and processed produce. Once again, taking into account intrinsic potential for growth, our own capability to provide services, and the need for help as perceived by potential beneficiaries, we decided to focus most of our effort on the fresh produce industry, but in practice we did carry out several assessments of possible freezing, sous vide or juice/pulp/concentrate operations.

Within the ornamental crop segment, the principal industries are: cut flowers, bouquets and arrangements, foliage, potted plants, and bedding plants. Of these, PROEXAG elected to work mainly in cut flowers, focussing on selected traditionals, tropicals and exotics.

Even after narrowing down the possible segments and industries this way, an unmanageably large universe of possible crops remained, so the next step was for the core PROEXAG team to develop a long list of about 40 crops within these segments and industries that were plausible candidates, in our collective judgment, given their intrinsic potential for Central America.

The long list was then reviewed in group discussions that analyzed each crop in terms of such factors as:

- whether the product would be enterable in target markets;
- whether the crop was already being grown in the region, and in what volumes;
- whether the crop could be grown in the region, and under what conditions;
- whether Central America as a whole, or specific sites within it, could produce that crop with competitive quality and at a competitive price;
- whether we could identify one or more comparative and competitive advantages on which to base a business;
- how complex was the required production, post-harvest or processing technology;
- how capital, labor, or management intensive the crop was;
- whether appropriate transport service existed to get the product to market;
- how favorable the trends in consumption, supply and price appeared to be in target markets;
- whether potential growers or exporters had already expressed interest in that crop or not;
- whether it had already been identified as a priority by at least two of our counterpart organizations; and
- could we deliver the technical assistance needed to make the crop a commercial success.

The main crops, crop groups and product forms that emerged from this exercise initially included:

- fresh canteloupes
- fresh honeydew melons
- fresh cucumbers
- fresh (seeded) watermelon
- fresh asparagus
- fresh raspberries
- fresh blackberries
- fresh blueberries
- fresh and processed mangos
- fresh and processed pineapple
- fresh specialty bananas
- fresh and processed plantains
- fresh and processed specialty vegetables
- processed tropical exotic fruits
- cut traditional and tropical flowers

Over time the list was modified as follows: cucumbers were largely dropped as not cost competitive; watermelon was changed to only seedless watermelon because of high transport costs relative to sale price; blueberries were dropped when declared by APHIS to be medfly susceptible; pineapple was dropped due to cost disadvantages versus the multinationals; broad groups such as cut flowers were narrowed down to specific crops such as roses, heliconias and colored callas; and targets of opportunity were added, such as edomame.

2. Priority Markets

The selection of priority markets was less difficult than the selection of priority crops. Given Central America's proximity to the United States, the latter was the obvious choice as the highest priority market. However, since the United States is a big country, and at the start of the project a large percentage ($\pm 85\%$) of the produce being exported from Central America entered through the South Florida ports, the issue arose as to whether PROEXAG should simply accept that fact or make an effort to explore and develop alternative ports of entry, which might in turn allow for greater penetration into different marketing areas within the U.S. In fact, we did decide to work toward developing alternative ports of entry, coupling that with alternative sources of refrigerated transport service and alternative ports of exit.

The next highest priority market was deemed to be Canada. However, during project implementation several discoveries led us to downplay that market. First, it became clear that Central American products were already reaching Canada after being trucked overland from the U.S. ports of entry, so in some ways it was not a distinct market. Second, the lack of availability of direct air transport, coupled with medfly-related restrictions on touching ground south of Baltimore for many products, and the high cost of a possible air charter, made the market infeasible for most products. Third, Canadian marketing areas are of limited size and purchasing power, so both volume and prices tend to be low.

The third priority market was Europe, especially England, but also Germany and France. The main impediments to further penetration of these markets proved to be the availability and cost of reliable refrigerated cargo service (by air) and the long transit times (by sea).

Japan was the fourth priority market. Our approach there was first to conduct a systematic analysis of barriers to entry (physical, phytosanitary, tariff and non-tariff), next to collect as much relevant information on market structure, marketing practices, and trends by segment and crop as possible, then to disseminate the information through training seminars, and finally to nurture any export deals that might result.

3. Priority Themes

We also knew that certain key technologies had to be developed, transferred or adapted before some of our target crops could reach commercial viability. And to protect the export increases already obtained for other crops, technologies often had to be improved or applied more consistently. With that viewpoint in mind, early on in the project the PROEXAG team

identified various priority themes on which we wanted to work in the production, post-harvest, processing, transport and marketing areas. These are listed in detail in annex D (along with our accomplishments against each priority).

C. HORTICULTURAL EXPORTS REVISITED

Having defined priority crops, markets and themes, the next concern of the PROEXAG team was achieving a shared vision of the task we faced and how best to approach it. That concern led us to stop and reconsider the nature of commercial horticulture in general and of horticultural exports in particular.

1. What Did Target Markets Want?

Past experience had taught the PROEXAG team members that what receivers of imported produce in developed countries wanted most, and in this order, was:

- ▶ The best possible product quality
- ▶ Acceptable condition of the product on arrival
- ▶ Consistency of supply (the fewer the spikes in volume, the larger the average volume, and the longer the supply period, the better)
- ▶ Competitive landed cost
- ▶ Good service (i.e. timely and complete communications, with no surprises)

The sense of the team was that Central American growers and shippers of non-traditional crops could, in theory, satisfy all of these market requirements, but that it might take five to ten years before significant numbers of producers in the region could meet them all.

2. On What Basis Could Central American Growers Compete in Horticultural Trade?

Looking at the NTAE enterprises that were already prospering in Central America, it struck us that they were always built around one or more comparative advantages plus any number of competitive advantages.

Since most NTAE ventures involve seasonal, highly perishable crops, the two most common comparative advantages had been favorable agroecology and good proximity and access to market.

But beyond those factors, which derive mainly from natural endowments, there were other competitive advantages that are more directly under the control of the entrepreneur. Successful NTAE businesses had often been built on a combination of appropriately adapted technology, relatively low labor rates, reasonably high labor productivity, competent farm management, high product quality, and capable marketing.

With appropriate assistance from PROEXAG and other sources, we felt that there was no reason why many new grower/shippers could not also use this formula for success.

3. How Risky are NTAE Businesses?

We knew from experience that NTAE businesses could be very risky indeed, because they:

- Are subject to the vagaries of weather
- Generally involve highly perishable crops
- Usually involve crops that require local testing, adaptation or even development of new varieties and production technologies
- Are often dependent for success on finding optimal agroecological sites
- Tend to aim for short market windows that shift each season and may disappear with time
- Are prone to sudden and marked price changes caused by uneven supply in localized end-markets or intermediate distribution points
- Allow relatively little margin for error and correction
- Militate against continuous learning because of seasonality and climate
- Are characterized by an unusual cost structure in which a large percentage of the costs are virtually beyond the control of the entrepreneur (e.g., transport)

Realizing how risky the activity we had committed to support could really be, the team vowed not to encourage potential entrepreneurs who seemed to lack the financial, technical or managerial capacity that we knew was needed.

4. How Profitable are NTAE Businesses?

PROEXAG team members all agreed as well that NTAE ventures can be very profitable indeed, but that the level of profits is highly volatile, largely because of the risks just mentioned. The rule of thumb for seasonal produce businesses, for example, over a five-year period is: one year at break-even, one year of mediocre profits, one year of modest losses, one year of heavy losses, and hopefully, one year of huge profits, which makes up for all prior losses and makes the struggle seem worthwhile.

5. What Does Sustainability Mean in this Subsector of Agriculture?

Sustainability of the subsector as a whole depends on the viability of individual growers, shippers and exporters. Viability at the enterprise level could be defined as: (1) the ability to identify, penetrate, maintain, and where possible expand markets for locally produced horticultural crops or products in the face of competition and changing circumstances; (2) the capacity to withstand losses during start-up and bad seasons; and (3) the ability to generate an acceptable return on capital invested, over the medium- to long-term.

D. ACHIEVING VIABILITY AT THE ENTERPRISE LEVEL

1. The Importance of Know-how

Although any number of deficiencies could undermine the viability of an NTAE enterprise, the consensus of our team was that nearly all such deficiencies could be traced back to a lack of know-how, whether related to

products, markets, technologies or management.

Although failure can occur at any stage of enterprise development, we perceived that a lack of know-how is most crucial at the conceptualization stage, when many critical assumptions and decisions must be made on incomplete knowledge, long before entrepreneurs have had the opportunity to fill in gaps through experiential learning.

So we concluded that one of the key functions of this project should be to provide export entrepreneurs with the know-how they lacked, especially during the early stages of business development, but also at critical junctures throughout execution.

2. The Meaning of Business Know-How

What does the term "know-how" mean? When applied to business, it encompasses not only data, technology and competitive intelligence, but also the skills needed to use these tools effectively in the pursuit of profitable opportunities and the resolution of problems.

3. Know-how in the Non-traditional Agricultural Export Subsector

An analysis of our collective experience in business development and the horticultural industry led us to conclude that know-how in virtually all facets of export-oriented commercial horticulture was lacking in Central America. Tasks that new entrepreneurs often find difficult to accomplish include:

- How to analyze markets and identify opportunities
- How to estimate required investment and probable costs and returns for a potential venture
- How to apply for and obtain appropriate financing
- How to select and negotiate with reputable receivers
- How to grow, harvest, pack and handle each type of crop
- How to select and negotiate with transport carriers, freight forwarders, customs brokers and cost storage providers
- How to monitor and interpret prices
- How to collect payment and resolve disputes
- In general, how to operate and manage a successful horticultural export business

4. Know-how at the Enterprise Level

While any agribusiness venture requires certain generic business skills and technical understanding, the know-how required to be truly successful tends to be crop-specific. Rose producers would never presume to understand the snowpea business, for example, although they might sympathize with a shortage of air transport that affects the export of both roses and snowpeas.

And the know-how is not just crop-specific, but also specific to product form. For certain large-volume crops in the United States, such as oranges for example, growers who target the fresh market often say that they are in a different business from those who target the juice and concentrate market.

Similarly, know-how is specific to production area. Growers of carnations in Colombia will not be successful in Guatemala if they simply transfer their technology without experimentation and adaptation to the local agroecological conditions.

The required know-how also varies by target market because business practices, commercial standards and consumer preferences vary by end-market. For example, the U.S. market prefers fresh green asparagus with large diameter stalks, while in some European countries the norm is white asparagus with small diameter stalks.

The greater the differences between production area, crop, product form and target market, the less similar is the know-how required to be successful. A Honduran melon producer who ships by sea from Puerto Cortes for consignment sale through an agent in Florida bases his business on very different know-how than a producer of mangoes in Guatemala who markets them on an FOB (farmgate) basis to a multinational company that uses its own vessels to carry them on to Europe.

Although generic business skills may be applicable in both cases, the process of acquiring competitive know-how takes time--often five years or more. That is why growers or exporters who are experienced and successful in one horticultural crop may not initially be successful in another.

5. Deals as the Determinant of Both Know-how and Viability

In commercial horticulture, especially within the fresh and processed produce segments, business turns on "deals". In its most simple form, a "deal" represents a combination of production area, crop, product form, seasonality and target market. A typical example would be the "South Texas cantaloupe deal", which normally produces melons for fresh consumption within the U.S. from mid-May to mid-June. (The term is also commonly used to describe multiple crops from a well-known source area, as in "the Chilean deal"; or in reference to a particular shipper, as in "the ABC Farms deal; or a particular receiver, as in "the DOLE deal"; or even a specific transaction, as in "the '91 ABC-Dole tomato deal; but here we are using the term as first defined).

The unique characteristics of each deal determine what a grower, grower/shipper, exporter or receiver needs to know to be successful at that particular deal.

Since most enterprises in commercial horticulture are built around one or more deals, and the overall business prospers only when most or all of its deals are profitable over time, in effect it is the deals that determine the viability of the enterprise.

That being the case, once the decision was made under PROEXAG to promote the viability of NTAE enterprises, the main focus of our attention was on making sure that as many deals as possible were well conceived and well-executed. That meant that the essential task we faced was to help entrepreneurs identify and acquire the data, information and technology critical to each type of deal they were pursuing, then assist them to apply that knowledge appropriately.

E. TRANSFERRING KNOW-HOW UNDER PROEXAG

1. Selecting Client Enterprises

Once the project got underway and the team became known, demand for our advisory services rapidly outgrew available time and resources. The more people we assisted, the more people came to seek help. This resulted in an expanding and constantly changing kaleidoscope of potential clients--growers, exporters, processors, association staff, buyers, government officials, students and researchers--not all of them intended beneficiaries or economic actors able to make a direct impact in terms of increased exports.

In an attempt to manage this, about six months into the project a rating sheet was developed to rank prospective clients in terms of 20 different criteria, which covered three main themes: (a) the intrinsic potential of the business concept; (b) the apparent potential of the entrepreneur and his enterprise; and (c) conformity with project priorities.

We then tried to tie the rankings to different levels of assistance, allocating greater amounts of effort to those clients that had the highest composite score. The theory was that unfamiliar or marginal clients should have the right to a single telephone conversation or even an hour-long office visit, but only pre-qualified clients should be granted repeat office consultations or site visits, and only the most promising clients should receive a commitment from the project team for assistance over a full season or more.

However logical this approach may have seemed, in practice it proved too complicated to apply, so it was soon discarded. In the end, who to help and how much help to give became a matter of judgment. The team tended to provide relatively more assistance to those who seemed to have a promising business concept, sincere interest, real need, and the promise of becoming successful. But at the same time we tried to maintain a focus on those crops that we had defined as priorities, to maintain balance between countries and client groups, to seize opportunities to make breakthroughs in technology or market access, to resolve problems in ways that could be generalized to other growers/shippers and last, but not least, to achieve bottom line success in terms of increased export volume and value.

2. Adopting a "Whole-Enterprise" Perspective

Although the statement of project purpose correctly assumed that "production technology and market intelligence" are important to success in NTAE businesses, the PROEXAG team felt that they are just part of a much larger need, and that exclusive dedication by the project to remedying just one or a few deficiencies in knowledge or skill among client entrepreneurs would "solve the problem" or "lead to a takeoff in exports".

Since a wide variety of inputs and skills must fit together to make a successful enterprise, and those inputs or skills vary according to the specific business at issue, it followed that the PROEXAG team should adopt a holistic perspective in providing technical assistance. Rather than viewing PROEXAG as an agricultural development project that devoted some of its

effort to helping specific growers and exporters, we chose to view PROEXAG as an enterprise development project that should concentrate on assisting selected agricultural businesses to export their horticultural products profitably. While the distinction was not always clear to outside observers, and even within the team the temptation to wander or get spread too thin was always present, but over time this vision did enable us to maintain the focus on horticultural export development as a business.

3. Deal Facilitation and Support

Recognizing the primacy of the "deal" in many horticultural industries, we initially described the PROEXAG approach as "deal-making". However, the team provided not just advice in marketing but also in production, postharvest handling, transport, and general management. So the phrase "deal facilitation and support" better describes the approach to NTAE development that we used.

The sequence typically followed when approached by a new client for help was as follows:

- .. Analyze the business concept or deal of concern
- .. Seek to identify the critical success factors inherent in that deal
- .. Compare and contrast them with the clients present resources and knowledge
- .. Identify what was missing or deficient
- .. Then look for a way to remedy the deficiencies, mitigate their effects, or somehow compensate for them through technical assistance or training

Simple though it may now seem, this enterprise- and deal-oriented methodology was new, unusual and even somewhat controversial when first applied under PROEXAG in 1987.

4. Matching Project Resources to Client Needs

A final element of the PROEXAG approach that might be of interest to development planners was how we handled diversity and complexity.

The scope of the PROEXAG project covered: (a) at least two major segments within horticulture; (b) 15 priority crops in detail, within a universe of perhaps 100 crops in which we had a general interest and about which we received requests for information; (c) several different product forms; (d) four major geographic markets; (e) all phases of agricultural production, from production through marketing; (f) seven different source countries; (g) nine different counterpart organizations; and (h) about 250 individual client enterprises.

The implementation strategy we developed to respond to this situation consisted of:

- Assembling a versatile core of advisors with wide-ranging education and experience
- Supplementing their knowledge with specialists in target crops
- Arranging access to short-term, recognized experts in narrow subject

areas

- Making sure up-to-date technical literature and marketing information was on-hand, catalogued and accessible
- Maintaining close contact with key receivers of priority crops in the target markets
- Selecting, mixing and matching available resources available to fit the requirements of a given deal
- Endeavoring to combine technical and business judgment in an artful manner to make all the required elements of success fit together for the client

SECTION III

INPUTS PROVIDED

A. THE PROJECT BUDGET

The Non-traditional Agricultural Export Support Project was initially funded to a maximum level of \$8.0 million, to be expended over a five-year project spanning the period from July 1, 1986 to June 30, 1991.

In June of 1990, in recognition of the re-establishment of diplomatic relations with both Panama and Nicaragua and their subsequent reincorporation into the USAID/ROCAP mandate, an amendment to the project paper was signed that increased available funding to \$9.0 million, and extended the Project Activities Completion Date to September 30, 1991.

B. THE CONTRACTORS

Chemonics International Consulting Division was the principal implementing agent for the PROEXAG project, supported by subcontractors SRD Research Incorporated and AGRIDATA Resources, Limited.

Chemonics' prime contract with USAID/ROCAP was signed on September 29, 1991 for 4.75 years in the amount of \$5.2 million. A subsequent amendment raised the contract amount to \$7.2 million and extended the Contract Activities Completion Date to September 30, 1991.

Over and above the Chemonics contract, funds available under this project were used to cover the costs of: (1) contracting a Project Liaison Officer for a period of approximately three years; (2) conducting a mid-project evaluation; (3) contracting for the design, validation and initial replication of a course on rational pesticide use; (4) funding a PASA agreement with USDA/OICD to organize a regional seminar on medfly control technologies and the travel of FDA and EPA officials; (5) financing one-third of the cost of the Miami Reporting Office of USDA's Market News Service; and (6) selected other small activities.

C. GOODS AND SERVICES PROVIDED

1. Personnel Provided

Under the Chemonics prime contract and associated subcontracts, a total of 300 person-months of long-term effort was actually provided over a sixty-month period. Key personnel assigned to post in Guatemala included: (1) a Team Leader (first Edward Hurlston from November of 1986 to March of 1988, then John Lamb from April of 1988 to August of 1991) for 58 person-months in all; (2) a Computer Utilization and Information Specialist (Bruce Brower from December of 1986 to July of 1991) for 57 person-months; (3) a Marketing Specialist (Ricardo Frohmader from July of 1987 to July of 1991) for 48 person-months; (4) a Post-harvest Specialist (first John Guy Smith from November of 1986 to December of 1990, then Dale Krigsvold from January of 1990 to August of 1992) for 56 person-months; (5) a Production Specialist (Jose Mondonedo from January of 1986 to July of 1991) for 55 person-months; and

(6) a Training Specialist (Jose Oromi from November of 1986 to January of 1989) for 26 person-months.

In addition, Chemonics and its two subcontractors provided more than 250 person-months of professional short-term effort through a combination of home office staff, expatriate and Central American experts hired on an intermittent basis for specific assignments, and technical assistants hired within Guatemala

la as internal counterparts to the resident advisory team.

2. Equipment and Commodities Provided

Subsumed within the prime contract budget was the purchase of certain items for immediate use by counterpart organizations in all seven countries within Central America. Although the exact list varied by country and counterpart, the equipment and commodities provided generally included: 1-2 desktop computer systems complete with printer, accessories and software; a fax machine, paid access to AGRIDATA for a limited time; and a core library of technical materials. In addition, in the special case of Nicaragua, the project served as the conduit (through a buy-in) for USAID/Nicaragua to help equip the entire office for our counterpart organization APENN and provided its first vehicle.

3. Pilot Projects in Agricultural Research

The project also funded about \$75,000 worth of applied agricultural research. Most of the funds were applied to the procurement of planting material used to test the adaptability of different cultivars of priority crops (especially asparagus, blackberries, raspberries, colored callas, proteas, and heliconias), but some funding was devoted to melon virus research, use of modified atmosphere technology, and alternative packaging.

4. Training

About \$360,000 were spent on activities formally classified as training. These included: more than 100 seminars, workshops and field days formally organized by PROEXAG; some 15 regional conferences on different themes; participation by the PROEXAG team and selected counterparts at industry conferences such as the PMA, UFFVA, ANUGA, and SIAL; design and pilot testing of new short courses; development of audiovisual and other training materials; and about 15 observational tours to the U.S., Europe, and Chile.

In fact, however, the actual amount spent on training was considerably higher, given that it was impossible to draw a clear distinction between technical assistance and training activities in a project such as PROEXAG, which emphasized experiential learning that occurs on the job and in the marketplace.

SECTION IV

PROBLEMS ENCOUNTERED

A. INSTABILITY IN THE POLITICAL AND BUSINESS ENVIRONMENT

Business requires a stable environment to prosper. When political and economic stability are lacking, local entrepreneurs refrain from investing, foreign investors shy away, and importers look for alternative suppliers in more stable areas. This is especially true in high-risk sectors such as non-traditional agriculture.

For that reason the most serious problem that affected the PROEXAG project was without doubt the unstable economic and political environment that existed in many of our client countries during the 1986-1991 period.

B. UNREALISTIC EXPECTATIONS OF DONORS AND OBSERVERS

At the moment PROEXAG began, the CBI Initiative was still very new. Many U.S. and local government officials, donor representatives, development analysts and potential entrepreneurs thought that the CBI would generate large and rapid gains in exports from Central America and the Caribbean countries. Mexico and Chile's impressive growth in horticultural export volume was often cited as an example of what the region could and should achieve in the NTAE subsector.

While such optimism about the intrinsic potential of high value horticulture was not entirely misplaced, at least for Central America, the presumption that this potential would be quick and easy to realize was unrealistic. Mexico's evolution into a major horticultural exporter began with the embargo placed against Cuba in 1959, but did not really gather momentum until the 1980s. The foundation for Chile's growth was laid in the 1970s, yet accelerated growth did not occur until after 1983. And in both cases these countries enjoyed natural advantages that Central America does not possess.

Experience around the world shows that a 10 to 15-year timeframe is required to establish a vibrant, self-sustaining NTAE subsector, yet many of the first generation NTAE projects in Central America assumed that five years would be enough. In the early years in particular, the PROEXAG team often encountered situations where unrealistic expectations of growth held by donors led export support organizations into inappropriate strategic decisions and where unrealistic expectations of profitability by banks and even the entrepreneurs themselves got individual businesses into trouble.

C. INAPPROPRIATE DEVELOPMENT THEORIES AND MODELS

Many of the most prominent export promotion projects in Central America in the mid-'80s were based on what the PROEXAG team felt was a mistaken premise about what causes economic growth in general, and export growth in particular. From the '70s through well into the '80s, development policy in most Less Developed Countries (LDCs) assumed that government should play a leading role in generating economic growth and play the predominant role in achieving social and economic equity. Development projects therefore tended

to focus on improving the efficiency, effectiveness and self-sufficiency of institutions charged with delivering the services and infrastructure that facilitate growth.

While institution-building may have made sense for public services, the model was not readily applicable to the private sector, where associations and other representative organizations tend to get established voluntarily by business only in response to a perceived need to undertake collective action to resolve problems. When anyone other than the directly interested parties sets up a new institution--even if it is done independently of government--the institution risks taking on a parastatal (i.e. non-voluntary and externally imposed) character. Worse still, when substantial resources are channeled through such an institution--usually by foreign donors--the entity tends to grow out of proportion to the number and scale of intended beneficiaries. In the extreme, such entities can stifle the very initiative that they were set up to serve. Within the export promotion field in Central America, a number of conspicuous examples of this phenomenon were evident in the early years of PROEXAG.

On the other hand, when industry associations are established by directly interested parties, remain under their control, and grow in proportion to felt needs and available resources, they are better able to protect gains already achieved by that industry, help remove obstacles to future growth and effectively represent the collective interests of their members. But development policy-makers need to remember that even well-founded and well-managed associations such as the Produce Marketing Association and the United Fresh Fruit and Vegetable Association are not the cause of growth, which derives instead from the entrepreneurial activity of their individual members.

Over time, this latter view of the world took hold in Central America. By the end of the PROEXAG project, export promotion efforts throughout the region had begun to adjust their strategies, size, staffing and service menus to become more responsive to member needs.

D. INSTABILITY WITHIN COUNTERPART ORGANIZATIONS

We were pleased to observe the shift in philosophy and approach just described because in the long run we believe that it will provide the most benefit to growers and exporters of NTAE crops, thereby benefitting the region.

However, for purposes of this report we should note that in the short run such changes in organizational focus and structure tended to disrupt the continuity of project activities. Most of PROEXAG's counterpart organizations had at least one serious shakeup over the 1986-1991 period, and two entities underwent major reorganizations which entailed considerable loss of personnel, many of whom had been trained by PROEXAG.

SECTION V

OUTPUTS ACHIEVED

Although accomplishments achieved by the PROEXAG project are described in detail in annexes C (crops), D (themes), and E (deals), in this brief section we summarize key accomplishments

A. ESTABLISHMENT OF NEW CROPS AS COMMERCIALY VIABLE

PROEXAG was directly responsible for the successful introduction of seedless watermelon, colored calla lilies, and edomame as new export crops for Central America and played the lead role in establishing green asparagus, several new varieties of blackberries, and several varieties of red raspberries as commercial export crops.

B. INTRODUCTION OF KEY PRODUCTION TECHNOLOGIES

PROEXAG was the leader in clarifying the epidemiology of virus in melons, disseminating stylet oil-based control technologies for melons and other cucurbits, introducing new mango flower induction technology and in defining appropriate cultural practices for asparagus in the topics.

Moreover, PROEXAG spearheaded a regional effort to achieve better understanding of pesticide use regulations on export crops and improve agrochemical usage on horticultural crops.

C. INTRODUCTION OF KEY POST-HARVEST TECHNOLOGIES

PROEXAG led the region in improving quality control at the packing shed for NTAE crops, both to improve the condition of arrivals and to ensure food safety.

PROEXAG was also responsible for introducing modified atmosphere technologies for strawberries into the region.

D. IMPROVED TRANSPORT SERVICE FOR NTAE CROPS

In collaboration with other entities, PROEXAG helped relieve a shortage of refrigerated containers, expand the availability of reefer service, contain escalating costs, diversify ports of exit from the region and ports of entry into the United States, encourage multinational banana companies to provide commercial service for perishables, and establish the first commercial trucking service for perishables through Mexico.

E. ENHANCED MARKET LINKAGES

PROEXAG played the key role in upgrading the quality of receivers of Central American products in target markets, introducing 10-15 highly rated new receivers into the region, improving the understanding of local grower/shippers of how the horticultural industry operates abroad, and enhancing access to target markets for many priority crops.

F. IMPROVED USE OF TECHNICAL AND MARKET INFORMATION

PROEXAG introduced to the region an abundance of technical and marketing information never before seen and was instrumental in raising the overall level of know-how for some 250 clients.

G. INCREASED EXPORTS OF NON-TRADITIONAL AGRICULTURAL CROPS

Over the life of the project, PROEXAG facilitated more than \$ 50 million worth of new deals, and through the introduction of new production and post-harvest technologies generated another several million dollars worth of exports of absolutely new crops.

H. INSTITUTIONAL DEVELOPMENT

Through a mixture of formal and informal training, as well as on-going technical support, PROEXAG significantly raised the level of understanding of commercial horticultural industries on the part of the general management and staff of all of our counterpart entities, and upgraded their capacity to provide essential services to affiliated growers and exporters.

Moreover, PROEXAG played a key role in the establishment and initial operation of two entirely new export support organizations--APENN in Nicaragua and GREXPAN in Panama.

SECTION VI

LESSONS LEARNED

A. HORTICULTURE IN THE WORLD ECONOMY

Per capita and total consumption of fruits, vegetables and ornamental crops is rising in most developed countries as populations age, health consciousness increases, consumer tastes change and disposable income rises. Consumers now expect to have access to a wide range of fresh and processed produce and flowers on a year-round basis.

Major suppliers from within the developed world are endeavoring to meet this changing demand. U.S. statistics for 1990, for example, show that even though overall agricultural exports declined 6% to \$37.5 billion, horticulture-based exports rose 17% to \$6 billion, making horticulture for the first time the number one food product segment among our agricultural exports.

However, producers within the developed world face important constraints to further growth: rising labor costs, competition with real estate for available land, scarcity of water, and stringent environmental and operating regulations.

These constraints, coupled with the desire of retailers and institutional users to offer continuity of supply and diversity of product, imply increased participation by source areas that can grow in the off-season, can produce specialty and exotic items, have reasonably good access to market, and can consistently provide product of acceptable quality at competitive landed costs.

Together these phenomena have provided a powerful stimulus to increased imports from developing countries. Horticultural products now top the list of agricultural imports into the United States. Moreover, imports continue to provide an ever larger share of the total U.S. utilization of fruits, vegetables, and cut flowers.

B. THE DETERMINANTS OF HORTICULTURAL EXPORT GROWTH

1. A Comparison Across Source Countries

Some countries have captured a disproportionate share of the expanding market for horticultural products in the developed countries. In the case of the U.S. market, for example, the conspicuous winners have been Mexico and Chile.

By 1990, Mexico was exporting some \$1.6 billion of horticultural products into the United States. Of this amount, more than half was fresh and processed vegetables, making Mexico the premier vegetable exporter for the U.S. market. In some crops, such as fresh mangoes, frozen broccoli and frozen cauliflower, Mexico now supplies as much as 90% of U.S. imports.

Chile's horticultural export growth has also been extraordinary, reaching a level of \$440 million in 1990. The country's performance has been particularly strong in fresh deciduous fruits, especially grapes, peaches, pears, plums, and apples, but Chile is also becoming a major supplier of imported raspberries, blackberries, and asparagus.

Among the CBI countries, exports of horticultural products (excluding bananas and plantains in their various forms) to the United States rose from \$ 88 million in 1983 to \$ 281 million in 1990. As the charts in annex H indicate, the most successful countries have been Costa Rica and Guatemala, attaining levels of \$ 98.5 million and \$53.8 million respectively. (These figures do not include substantial levels of exports to Canada, Europe, and Asian markets).

Why have developing countries within this hemisphere, and indeed around the world, experienced very different rates of growth in horticultural exports? In search of an answer, we return to Mexico and Chile.

a. The Mexican Experience

Mexico's evolution into a leading supplier of winter produce and cut flowers had its origins in the Cuban Revolution. When the United States placed a trade embargo on Cuba in 1959, suddenly a major source of off-season produce was cut off. Fresh red tomatoes, bell peppers, cucumbers, grapefruit and other large volume items had all been imported from Cuba in significant quantities. Moreover, Floridian growers were left without a hedge against the frosts that tended to devastate their own production every few years. So a large opening for Mexico appeared unexpectedly.

In time, a number of Mexican entrepreneurs as well as many U.S. producers saw the opportunity to take advantage of that country's favorable growing conditions for many of the same crops--especially tomatoes, peppers and cucumbers--and its relatively easy and quick access to the U.S. Initially through sourcing arrangements, and eventually through joint venture operations, an export horticulture industry was born in Mexico. But the process took a relatively long time--well into the 70's and even into the '80s--before a real take-off was evident.

b. The Chilean Experience

In the mid-'70s, when Chile began its first serious effort to increase horticultural production for export, it had many advantages:

- Abundant arable land and water resources, coupled with substantial diversity of growing conditions, which could be exploited to produce the same crop over an extended season simply by moving production sites
- Mirror-image agroecology with the West Coast of the United States, which facilitated the almost wholesale adoption of varieties and production technologies already proven in the States
- Relative freedom from the Mediterranean fruitfly and other major pests that prohibit or constrain entry of product into the U.S.

- Natural capacity to produce deciduous fruits for which there was a wide-open market window in North America, and which have relatively long transit and shelf lives
- Ability to produce many of the fruits that comprise the "Top 20" list in the North American market in terms of per capita and total consumption
- Ability to aspire to the large volumes needed to achieve economies of scale in infrastructure and transport service
- A head-start in terms of area planted and experience gained in the most promising crops
- A relatively abundant, low-cost, literate labor force
- A highly educated technical and managerial workforce
- A reasonably large domestic market
- A longstanding tradition of contact and commerce with Europe

As in the Mexican case, over time these comparative advantages attracted considerable interest on the part of local and foreign investors, who together transformed Chile into a major force in both the United States and European produce industries.

c. Mexico and Chile versus Central America

How similar to the Central American situation were the conditions that prevailed in Mexico in the early stages of its export boom? Not very similar, really. Mexico had a much larger and growing domestic market, enjoyed much closer proximity to (and shared a border with) the target market, and was able to produce many high-volume crops that Central American cannot export to the States because of quarantine restrictions (especially the Mediterranean fruit fly).

Chile's initial situation was also quite different. Chile also had a larger domestic market than any of the Central American countries, had an agroecology naturally conducive to the production of many main-line crops, had more people educated and trained in horticulture, and most importantly, could produce deciduous fruits on a counter-seasonal basis with virtually no adaptation of already proven foreign technologies.

2. Factors that Affect Horticultural Export Growth

What conclusions can be drawn from the Mexican, Chilean and Central American experiences concerning factors that influence growth in horticultural exports?

In our view, there are seven key determinants of horticultural export growth: (1) natural endowments; (2) human capital; (3) ancillary infrastructure and services; (4) governmental policy and strategy; (5) the international political, economic and trade environment; (6) industry structure and dynamics; and (7) entrepreneurial capacity.

a. Natural Endowments

Natural endowments--soils, rainfall, luminosity, temperature ranges, and topography provide the foundation for all horticultural activity. Where horticultural exports in particular are concerned, their seasonality (i.e.

comparative growing periods) and perishability (especially access to market) make geography an extremely important endowment.

b. Human Capital

The Chilean experience in particular demonstrated the importance of investing in human resources. In the mid-1970s, the Chilean government, educational establishment and industry joined together to make a long-term commitment to the development of human capital. Key programs included: "sister-school" arrangements with California agricultural universities; two-way exchanges of professors between Chile and the U.S.; substantial college, graduate and post-graduate education in agricultural disciplines in Chile and abroad; and in-service training for plant and farm managers in private enterprise abroad.

Over time this resulted in: a literate and educated workforce, a cadre of technicians trained in production and postharvest handling, a university community attuned to the research and educational needs of the horticultural sector, and a pool of managers trained in agribusiness.

c. Ancillary Infrastructure and Services

In order to validate adaptive research for horticultural crops, agricultural research facilities as well as cooperating farmer sites are generally needed. The identification of pests and diseases, the analysis of soil, plant and water resources, and pesticide residue testing all require locally available agricultural laboratory facilities. It makes no sense to grow horticultural crops for export if poor access roads make it prohibitively difficult or costly to move them to a port of exit. A shortage of refrigerated transport equipment prevents shippers from maintaining export products in the best possible condition. A natural harbor that has no docks, cold storage facilities or equipment for loading reefer containers is of little use in the perishables trade.

Examples such as these demonstrate the importance of establishing the physical infrastructure, research/education/extension institutions, and support services needed to make export horticulture work.

d. Governmental Policy, Strategy and the Enabling Environment

While some of the infrastructure and services just mentioned can and should be provided on a commercial basis from within the private sector, many require governmental action and public investment. A prior condition, then, is that the national government have adopted an export-oriented growth strategy and have established an enabling environment conducive to exports.

Again the Chilean case demonstrates how a policy decision by government to liberalize the economy, plus a strategic decision to nurture the horticultural industry by taking full advantage of natural endowments and enhancing human capital, became determinants of export growth.

During the late '70s and early '80s, Chilean leaders laid the foundation for a take-off in horticultural exports by:

- Adopting an extreme, free market-oriented macroeconomic policy that transformed the economy and over time re-defined the role of government
- Obtaining commitment at the highest levels of government to support the horticultural sector
- Forming a country promotion organization (PROCHILE) that retained a minimum of legal prerogatives, instead delegating much strategy setting and implementation back to private sector associations such as ASOEXPORT and FEDEFRUTA
- Establishing and endowing (with \$50 million) a private foundation (Fundacion Chile) that could help identify, adapt, develop and promote new crops and technologies
- Identifying and removing regulatory, procedural and practical impediments to the importation of required inputs, services, technology and capital and to rapid, efficient export of finished product.

(These same themes of macroeconomic policy adjustment, improving the enabling environment, transferring technology and nurturing lead enterprises are covered further elsewhere in this report)

e. International Political, Economic and Trade Environment

International trade by definition involves at least two countries. To the extent that companies in other countries supply or purchase similar products, additional countries become involved.

What this means is that trade is inevitably affected by the political and economic situation of supplier, receiver and competitor countries at the least, and often by the broader political and economic context as well.

Earlier on, this report described how non-traditional agricultural exports from Central America were affected by key events such as worldwide inflation and recession, the two Oil Crises, the Gulf War, and long-running insurgencies within the region.

The trade environment itself is another key determinant of export growth, as the GATT, the CBI legislation, the Canada-Mexico Free Trade Agreement, and more recently, discussions surrounding NAFTA have clearly shown.

f. Industry Structure and Dynamics

The rate and type of growth of any export sector are also heavily influenced: by the way export industries in both the supplier and target countries are organized; by the number, size, degree of integration, and scope of activity of individual businesses; by the way each industry operates and is regulated; and by technological and product innovation.

Prominent examples of this over the past decade in the case of horticultural trade include the increasing involvement of multinational banana companies in the production and marketing of NTAE crops, the increase in importance of foodservice distributors, the emergence of pre-cut produce as a major product form, and the noticeable shift in the retailing of cut flowers from floral shops to supermarkets.

g. Entrepreneurial Capacity

Finally, in our experience the most important determinant of horticultural export growth is entrepreneurial capacity. Any rigorous analysis of the Central American experience from 1986 to 1991 will reveal for each country and each crop that prospered a small number of lead entrepreneurs whose personal drive, business acumen and managerial skills were really what made their export enterprises prosper.

C. THE ROLE OF DEVELOPMENT POLICY IN FACILITATING EXPORTS

Over the past five years, two different schools of thought have emerged in the literature and practice of economic development concerning export promotion in developing countries.

The first school of thought argued initially that all that was required was to adjust macroeconomic policy in the direction of liberalization (i.e. "get prices right") so that natural market forces acting in a worldwide context of free trade would induce countries to export those products and services in which they had a comparative advantage. Proponents of this school tended to favor development interventions aimed at policy reform by the public sector, on a national or at most on the sectoral level.

The second school of thought argued that entrepreneurs in developing countries generally lacked the understanding of international markets, the production technology and marketing know-how needed to identify and profitably pursue export opportunities. Proponents of this school tended to favor development interventions targeted at private enterprise within priority sectors.

During PROEXAG's lifespan, the two schools of thought have begun to converge on a new synthesis that is probably more realistic than either extreme. Many proponents of macroeconomic policy adjustment have begun to focus on the "enabling environment" for exports, i.e. the translation of new export-oriented policy guidance into changes in law, regulations and administrative procedures that remove practical impediments to exporting. Some policy-makers and analysts have even gone beyond reforms aimed at helping all sectors equally, and begun targetting priority sectors and industries. At the same time, many proponents of project-level assistance aimed at lead enterprises and industries have perceived the importance of establishing effective mechanisms for collective action on cross-cutting problems (transport, for example), and are therefore focussing more than before on issues that relate to the enabling environment, and occasionally expand to the macroeconomic policy environment.

In the analysis that follows, this report seeks to describe in some detail the main elements of the hybrid approach that is evolving.

1. Adjusting Macroeconomic Policy

a. Liberalizing the Economy

Current orthodoxy in economic development theory calls for governments to liberalize their economies as a pre-condition to achieving

growth. In his 1991 book entitled "Getting Prices Right: Structural Transformation and Strategic Notions", Bruce Johnston lists certain key elements of economic liberalization:

- (1) Freeing up markets to determine prices
(i.e. "letting markets work");
- (2) Adjusting controlled prices to scarcity values
(i.e. "getting prices right");
- (3) Shifting resources from government into private hands
(i.e. privatization);
- (4) Redefining and streamlining government's role in development
(i.e. budget rationalization); and
- (5) Reforming public institutions to carry out government's new
role (i.e. institutional reform)

The first three elements listed above allow market forces to largely determine the allocation of private investment capital toward those businesses that offer the most favorable risk/return ratios. However, as the fourth and fifth elements of liberalization imply, even in open economies public policy directions must be selected and public investment decisions made. And as Johnston points out, there are generally more policy directions and projects that promise an acceptably high return on public investment than there are resources available. So government officials are continually forced to evaluate tradeoffs between alternative policy concerns and investment possibilities, then to make decisions based on other than "objective" criteria--taking into account an unwieldy mixture of economic, social and political considerations.

b. Reorienting the Economy Toward Export-Led Growth

When policy-makers place a high value on the generation of foreign exchange and jobs, export promotion tends to become a strategic priority. By the end of PROEXAG, that was the case in all Central American countries. In fact, as already described in the introduction, trade development has now become a high priority for almost every country in this hemisphere.

A 1988 study entitled "Promoting Trade and Investment in Constrained Environments: Lessons from AID's Experience" commissioned by AID's Center for Development Information and Evaluation confirmed with hard data what most observers would have expected: that exports of non-traditional products can and do increase even in constrained environments, but they tend to grow faster when the macroeconomic environment is neutral or slightly favorable.

Countries that elect to pursue export-led growth generally aspire to a stable, open and competitive environment for export-oriented businesses. PROEXAG's direct experience, as well as studies done by Belassa, Rhee and others at the World Bank's IENIN Department in 1989 and 1990, indicate that the ideal environment which allows local competitors to operate on an equal footing with foreign competitors is characterized by:

- Continuity in the basic system of government
- No extreme or unexpected changes in political governance
- An absence of social upheavals
- Monetary stability (i.e. minimal inflation, absence of

- sudden devaluations)
- A realistic (possibly slightly undervalued) exchange rate
- An absence of foreign exchange controls
- Limited or no controls on foreign direct investment or repatriation of capital
- An absence of tariffs, quantitative restrictions, export taxes, and qualitative import restrictions that distort pricing mechanisms
- Competitive wage policies
- No controls over the terms of sale or prices of exported products
- Assurance that competitive forces can play freely in all economic areas of the economy
- Avoidance, or at least the intent to reduce, state or monopoly control of productive activities

By the end of the PROEXAG project, all the countries in Central America were moving rapidly toward most or all of these conditions.

2. Improving the Enabling Environment

It is not enough, however, for appropriate macroeconomic policies to be promulgated at the national level. Since such policies often represent radical departures from the past, the public sector organizations charged with implementing them need time and incentives to reform regulations and administrative procedures. Individual export enterprises are directly affected by problems and impediments in the business, legal and regulatory environment, so careful reform at that level is now viewed to be as important as macroeconomic policy. Trade and investment analysts within AID's LAC Bureau recently identified some of the key conditions in the enabling environment that help facilitate exports (and foreign investment):

- Existence of corporate law and regulations that facilitate the formation of new enterprises and promote competitive business practices
- Ready access to competitively priced investment capital and trade financing
- Existence of mechanisms for non-credit capital allocation, such as bonds, notes, secondary markets, equity shares
- Unrestricted technology licensing and adherence to international standards with respect to the protection of trade secrets and payments under royalty and licensing agreements
- Rapid, unencumbered access to intermediate inputs at world market prices
- Access to trained labor and experienced managerial personnel
- Competitive labor codes, with appropriate enforcement and fair judicial process
- Fair, quick and reasonably-priced customs procedures
- Existence of minimal product standards, with appropriate enforcement systems (e.g. phytosanitary certificates)
- Adherence to generally accepted international accounting principles
- Transparent and consistent tax policy, laws and enforcement
- A fair and transparent judiciary system, including mechanisms for settling international disputes

3. Targeting Sectors, Subsectors and Industries

Achievement of the ideal conditions described above takes time and resources, both of which are always limited. Moreover, some conditions are more important to one sector, subsector or industry than another, so as governments seek to improve the enabling environment for exports they inevitably must choose which conditions to focus on. At a minimum, that implies that governments should prioritize economic areas in terms of their potential for growth or impact, determine with the advice of industry representatives which regulations or procedures represent the most serious impediments to export growth in those areas, and then make the necessary changes. In some cases, governments may go beyond actions aimed at just facilitating export growth and actually promote certain sectors. The non-traditional agricultural export subsector, for example, was targeted by the governments of Costa Rica and Guatemala during the latter part of PROEXAG. The cut flower industry was targeted in Costa Rica during the late 1980's. At the crop level, melons were targeted for special treatment in Nicaragua from 1990 on, while snowpeas and asparagus were targeted earlier on in Guatemala.

4. Nurturing Lead Enterprises

As already described above in section II, one of the key elements of PROEXAG's implementation strategy was to identify and work with lead entrepreneurs (sometimes called "channel captains" or "lead farmers" or "early adopters" in the literature on agricultural development and technology transfer) who seemed to possess the drive, technical capacity, financial resources and business acumen needed to become successful at producing new export crops or penetrating new export markets.

This approach was developed from within the PROEXAG team based on our practical experience in business development. Towards the end of the project, however, it was ratified in the formal literature on economic development. In 1990, Yung Whee Rhee of the World Bank's IENIN Department wrote: "No one disputes the macro and static benefits, and the micro and dynamic benefits, from ... LDC exports. However, the best means to initiate entry into the world market and to generate a supply response is an area of concern. In fact, this is the most critical question relating to LDC exports, yet most macro and trade theoretical analyses have overlooked it."

This same analyst had written earlier: "The supply response will not occur automatically or simultaneously in all firms in an economy which lacks technical, marketing and managerial know-how, and the capacity to package the various elements needed for exporting."

These two statements explain quite well why the PROEXAG approach seemed to work. For new growers and exporters of horticultural crops, it was not enough to familiarize them with the requirements of foreign markets and to facilitate the establishment of linkages with potential buyers. The more difficult problem was in fact how to increase their capacity to produce export quality crops, ship them on time, and deliver them in the required condition on a consistent basis. And even for those clients who had mastered the basics of production, post-harvest handling and marketing, once they had established long-term market linkages, they tended to become

supply-constrained due to shortage of capital, land, and/or management capacity. So Yung Whee Rhee was correct in focussing on "the supply response" as the critical bottleneck in export growth.

How can export development projects in general help resolve that dilemma? The answer lies in what Yung Whee Rhee and Bela Belassa wrote on an earlier occasion:

"The most critical ingredient for successful entry into international markets in the eleven success stories (studied) was almost always the presence of a catalyst, defined as an individual or company (domestic or foreign) or a public agency, or a combination of these, that (a) pioneered the process of development in an outward-oriented direction before anybody else in a sector, (b) packaged the needed know-how with domestic endowments and external financing, and (c) diffused the experience and know-how it learned in that initial development process....the catalyst served as 'creator' and 'transmitter' of the supply response."

Before the term "catalyst" had ever been applied by Yung Whee Rhee and Bela Belassa to the promotion of manufactured exports, the Chemonics team was already applying them to horticultural exports from Central America. As explained in earlier sections of this report, PROEXAG's approach rested on a conviction that the critical ingredient needed to make NTAE businesses successful was "know-how" in virtually all facets of export-oriented commercial horticulture. The fact that this approach worked was probably the most important lesson learned under PROEXAG.

5. Capturing Experience and Achieving Spread Effects

In those instances where lead entrepreneurs do achieve success in their export endeavors, the final development task is to capture, synthesize and then transfer to other enterprises the lessons learned from experience, so that larger numbers of entrepreneurs can benefit, so that the greatest possible spread effect can be achieved in terms of employment and income generated, and hopefully, so that self-sustaining industries can be born.

This is a task that remained largely undone at the completion of the PROEXAG project, but will be a major concern of the follow-on project EXITOS.

D. IMPLICATIONS FOR DEVELOPMENT PROGRAMMING AND PROJECT DESIGN

1. Lessons Learned

a. Non-traditional agricultural export businesses are high-risk ventures because they:

- Generally involve highly perishable crops
- Usually involve crops that require local testing, adaptation or even development of new varieties and production technologies
- Are often dependent for success on finding optimal agroecological sites
- Tend to aim for short market windows that shift each season and may disappear with time

- Are prone to sudden and marked price changes caused by uneven supply in localized end-markets or intermediate distribution points
- Allow relatively little margin for error and correction
- Militate against continuous learning because of seasonality and climate
- Are characterized by an unusual cost structure in which a large percentage of the costs are virtually beyond the control of the entrepreneur (e.g., transport)
- Are subject to the vagaries of weather

b. NTAE ventures have a high failure rate because of these risks. The rule of thumb for seasonal produce businesses over a five-year period is: one year at break-even, one year of mediocre profits, one year of modest losses, one year of heavy losses, and hopefully, one year of huge profits, which makes up for all prior losses and makes the struggle seem worthwhile.

c. The main cause of failure in NTAE enterprises in LDCs is a lack of know-how: product, market, technical, or managerial. While failure can occur at all stages of enterprise development, a lack of know-how is most crucial at the conceptualization stage, when many critical assumptions and decisions must be made on incomplete knowledge, long before entrepreneurs have had the opportunity to fill in gaps through experiential learning.

d. Viability in NTAE enterprises means: (1) the ability to identify, penetrate, maintain and, where possible, expand markets for locally produced NTAE crops or products in the face of competition and changing circumstances, (2) the capacity to withstand losses during start-up and bad seasons, and (3) the ability to generate an acceptable return on capital invested, over the medium- to long-term.

e. Growth and sustainability in the NTAE subsector both depend on the establishment of viable NTAE-oriented businesses and their subsequent expansion in terms of export volume and crop/product/market diversity.

f. The most cost-effective and long-lasting method of transferring know-how, technology, information and market access to the economic actors in NTAE exporting is through crop associations that have been formed voluntarily by grower/shippers and exporters of a given crop, but such associations tend to gain momentum and power only when a crisis occurs that threatens the viability of that particular crop group.

g. Appropriately conceived and well-managed export support institutions can help catalyze, accelerate or guide the natural evolution of the subsector, and may even induce growth. However, if affiliated businesses themselves do not prosper, such institutions will wither away when external funding is exhausted.

h. Export support organizations concerned with multiple sectors can play a number of important roles, most notably: (1) representing the collective interests of exporters on all non-traditional products, both domestically and abroad; (2) participating in and guiding macroeconomic policy dialogue; (3) helping to improve the enabling environment as it affects NTE

businesses; (4) channeling and managing external financial and technical support; (5) pursuing opportunities that require collective action across sectors; and (6) resolving crises whose implications or solution require collective action.

i. Individual NTAE enterprises can be successful despite severely constrained business environments or adverse political or economic environments, but the probability of success at the enterprise level and the likelihood of achieving sustainability at the subsector and sector level is lower in constrained or adverse environments.

j. Since NTAE businesses have little time for learning each season and are usually working in constrained political and economic environments with new crops and/or unproven technologies, establishment of a prosperous and self-sustaining NTAE industry in LDCs is a long-term undertaking. Given that 30 years or more were needed in Mexico, and 15 years in Chile, it would not be reasonable to expect the horticultural export subsector in a new growing region such as Central America to achieve any real take-off to self-sustainability in less than 10 years; and it might take even longer.

2. Implications for Development Interventions

To be truly effective, a comprehensive development intervention aimed at helping to establish and expand the NTAE subsector requires that assistance be provided at four levels: macroeconomic policy and infrastructure; export support organizations; crop associations; and individual (lead) enterprises.

As was explained earlier in this section, efforts to adjust macroeconomic policy and the enabling environment to encourage and facilitate exports should include both economic liberalization measures (especially the creation of open markets and the freeing up of exchange rates) and the establishment of a positive enabling environment (especially the elimination of duties on imported intermediate inputs, taxes on exports, cumbersome export documentation and procedures, and deficient port/airport infrastructure).

But while policy reform alone can help set the stage for business growth, there are too many distortions, inefficiencies in the flow of goods, services and information, and deficiencies in infrastructure, for policy reform alone to have the kind of rapid impact that host countries and donors alike both want to see.

Export support organizations should receive development support in recognition of the key role they play in identifying and helping to resolve deficiencies in policy, infrastructure and services.

Similarly, crop associations merit development support because they can play a critical role in technology transfer and problem resolution for specific crop groups.

But if, as we have argued, the growth and sustainability of the NTAE subsector depends on achieving as many viable NTAE businesses as possible, it follows that an overriding objective of development interventions should be

to enhance the viability of such businesses.

Again, if the principal cause of failure in NTAE businesses is the lack of know-how, it also follows that a major thrust of development interventions should be to facilitate access to required know-how by NTAE entrepreneurs. But the range of subjects within the NTAE subsector is broad, yet the needs of individual enterprises are very specific. So development interventions that seek to facilitate access to know-how for a wide spectrum of NTAE enterprises must seek a balance between investing substantial resources in the direct acquisition of know-how and transferring the capability to access external know-how to one or more export support entities, crop associations or individual producers.

Moreover, since what is crucial to success in business is not just the acquisition of information but its artful application, export support organizations or projects not only need to find a way to transfer to as many businesses as quickly as possible whatever crop, market, technology or industry intelligence may be needed, but also to transfer the capability to make use of that information. While some of that capability can be transferred by training entrepreneurs in project analysis, by far the most effective method is one-on-one consultation between a seasoned veteran and an individual client. Support for such consultations should be central to all NTAE development projects.

3. Desirable and Undesirable Characteristics in NTAE Development Projects

Summing up, NTAE development projects should:

- Be committed to achieving a self-sustaining increase in export volume
- Be built around the needs of enterprises, but with complementary efforts at improving the macroeconomic environment, strengthening export support organizations, and crop associations
- Possess the resources and flexibility to hire the best possible staff and consultants
- Encourage experimentation, experiential learning and on-going re-design.
- Have a long timeframe--at least 5 years, hopefully 10.

NTAE development projects should avoid:

- Pre-selection of target beneficiaries, particularly small farmers, in an economic endeavor that is relatively capital intensive, has high risk, and requires a long learning period
- Pre-selection of target crops, products, receivers or end-markets
- Pre-selection of specific sources of financing, inputs or services.
- Trying to use NTAE as a means to other ends, such as

developing a specific but limited region, fortifying cooperatives, or enhancing the status of women in development

- Reliance on "silver bullets," i.e., single solutions to a very complex situation, when the reality is that all aspects of the business are important and must fit together if it is to be successful
- Designation of a primary institutional conduit for external resources that is not driven mainly by growers
- Allocating too many resources too quickly to a single export support organization, which causes it to grow out of proportion to the subsector itself (often strangling rather than nurturing that subsector), and to shift its focus from being responsive to members to complying with donor wishes and rules
- Forcing self-sufficiency on a designated export support organization before the industry itself has grown to sufficient size and had sufficient experience to take it over
- Encouraging or forcing export support organizations to "get into the business" themselves, i.e. as a means of achieving self-sufficiency
- Channelling both technical support and business financing through the same support entity
- Attempting to mix traditional and non-traditional products in the same organization
- Treating institutional development as an end in itself rather than a means to enhancing sustainability at the enterprise level and of the NTAE subsector.

ANNEX A

PROJECT DESIGN SUMMARY LOGICAL FRAMEWORK

Life of Project:
From FY86 to FY91
Total U.S. Funding 18 Million

PROJECT TITLE: NON-TRADITIONAL AGRICULTURAL EXPORT SUPPORT

NARRATIVE SUMMARY

Goal

Contribute to long-term economic growth through the expansion of nontraditional agricultural exports from Central America and Panama (CA/P).

OBJECTIVELY VERIFIABLE INDICATORS

Measures of goal achievement

1. Individual country production and export statistics for nontraditional agricultural commodities show steady upward trends.

2. Increased number of entrepreneurs making new or expanding existing investments of nontraditional products.

3. Export data of the CA/P countries shows that CA/P countries are increasing their share of the market relative to others of the region.

4. Employment and wage data show steady increases as a result of project activities.

5. Number and/or value of joint ventures, buyer contracts, and foreign investment in processing facilities in the CA/P countries show steady increases.

MEANS OF VERIFICATION

Means of Verification

1. Individual country government statistics on production, exports, employment, wages and related factors.

2. Records kept by each country's federations, associations and individual production units.

3. Trade data obtainable from the US and other importers.

4. Individual country data on joint ventures, foreign investment in production and processing operations, and buyer contracts.

5. Published international trade data.

IMPORTANT ASSUMPTIONS

Assumptions for achieving goal targets

1. Sufficient political, social and military stability exists to permit the expansion of new economic activity and additional risk-taking.

2. The anticipated comparative advantage of the CA/P in terms of climatic, soil and labor conditions are of sufficient significance to justify added investment.

3. The Hispanic "ethnic" market in the US continues to grow.

4. Local and/or foreign capital is available and will be invested in the production and processing of nontraditional agricultural products if better market information and appropriate technical assistance are available.

5. The CA/P governments can and will expeditiously undertake appropriate steps to facilitate nontraditional agricultural imports, e.g., reduce bureaucratic procedures, not levy unreasonable export taxes; make foreign exchange available for purchases; necessary imports and services; not insist on the use of inefficient, unreliable, high-cost state-owned transportation facilities.

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORT/PAI ASSUMPTIONS
Goal	Measures of goal achievement	Means of Verification	Assumptions for achieving goal targets
6. The number of "channel captains" in the nontraditional agriculture export market significantly increases.			6. Domestic physical infrastructure of road, transport, storing, etc., is adequate to meet the demanding standards required for the export of these commodities. If not, timely investments can and will be made to keep pace with increased production for export. Necessary foreign exchange and other resources will be available to carry out these programs.
7. As the export trade increases, the demand for back haul cargo will increase in order to keep international transportation costs competitive.			7. As the export trade increases, the demand for back haul cargo will increase in order to keep international transportation costs competitive.

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS TRANSPORTATION costs competitive.
Purpose	Conditions that will indicate purpose has been achieved: (End of project status)	Means of Verification	Assumptions for achieving purpose
1. Create and/or strengthen private sector capabilities in the provision of hands-on training and technical assistance in skills related to production technologies and market intelligence for non-traditional agricultural exports.	1. National federations in four of the CA/P countries have developed an on-going capability to provide technical assistance and train channel captains and grower/exporter membership in market intelligence and production technology skills.	1. The federations must keep logs on computer use by staff and members. They must review and set EOP standards for the training programs prepared and carried out on computer use and analysis by federation staff and members.	1. The lack of data and inadequate analytical skills in utilizing data is a significant constraint to entering and prospering in non-traditional agricultural exports. The acquisition of these skills will remove a major constraint to export promotion.
2. National federation staff demonstrate a capability to professionally access, analyze, disseminate and train individuals in the use of market, historical and technical data pertinent to the decision-making needs of their membership.	2. Evaluate federation computer staff competence and knowledge of the data requirements for export promotion of non-traditional agricultural products. Set EOP goals in this area.	2. The federations will be prepared to develop a data management training program that involves active membership participation and continued utilization of federations data management equipment.	
3. The number of channel captains in the CA/P countries increases by ten each and the volume of non-traditional exports will have reached \$5 million/year per new channel captain.	3. Interviews with member users and ascertain over the life of the project what percentage of exporters are members of the federation and utilize its data services.	3. Have the flexibility to add new programs and as necessary, to increase the "practical" content of their training. It is intended that the major emphasis is for those to use their facilities and experience gained to date to provide needed practical training to practitioners now in the field. Institutional support is only an ancillary goal of this project.	

NARRATIVE SUMMARY

OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS TRANSPORTATION costs competitive.
4. Increased number of entrepreneurs making new or expanding existing investments of non-traditional ag. products.	4. Examine records of training courses given in each of the federations as to number, subject matter area, course content and participants. Visit training sessions and technical assistance program in session. Conduct systematic review with the membership of the federations to ascertain their estimation of the usefulness of the program and their willingness to pay for future programs.	4. The regional institutions will continue to receive their major financial support from the sources they have developed to date.
5. National Federations have developed linkages to regional and extra-regional training institutions and are arranging and coordinating training activities in export marketing and management for their members.		5. Operating entrepreneurs and their professional and technical staff will be able to free themselves to attend institutional courses given in another country.
		6. There are specific technical shortfalls in production, handling, impede the export of nontraditional agricultural products that can be overcome by training courses for entrepreneurs/risk takers and their technical personnel.
		7. Potential and actual entrepreneurs will attend programs and as they realize the benefits will be prepared increasingly to pay for future services.

PROJECT OUTPUTS	MAGNITUDE OF OUTPUTS	MEANS OF VERIFICATION	ASSUMPTIONS FOR ACHIEVING OUTPUTS
<p>1. Federation Strengthening</p> <p>Federation Staff Training</p> <p>Training will be provided to federation staff in order that they will become proficient in providing the following services to members, and non-members.</p> <ul style="list-style-type: none"> -Being able to effectively train federation members in the latest technologies involving production, post-harvest handling and transportation, marketing and data intelligence as they relate to non-traditional agric. exports. -The use of computers for acquiring and analyzing market data. -Market information management and dissemination. -Enabling users to identify relevant market information. 	<ul style="list-style-type: none"> - All participating export federation professional staff will undergo training programs in the following project areas: computer information application, export marketing, post-harvest handling and transportation; non-traditional agricultural production techniques; and will also provide training courses in the above fields to federation memberships and other project participants. - Each federation will develop work plans for providing services to its existing membership; and will formulate a plan to work with local cooperatives, producer associations and individual entrepreneurs who are not necessarily members of the federation. - A training methodology will be developed by each federation, and a fee schedule incorporated for the cost of services to the federation's membership. - Linkages will be made with regional training institutions and curriculums will be established for the proposed workshops and seminars to be financed under the project, (two per year). 	<p>Number of trained professional staff can be counted as well as the number of training sessions in groups and through individual assistance.</p>	<p>The federations will agree to supply and finance the needed staff and will be able to honor their agreements.</p> <p>1. Export federations exist or early on will be created to further the export of nontraditional agricultural products. These federations may have other goals and activities but the export promotion function of these organizations will be clearly defined and sufficiently separated to enable them to carry out support for the purpose of the project at a national level.</p> <p>2. The export federations of the five CACP countries and their membership view the advantage of regional cooperation to be sufficiently great so as to participate in joint training programs and technical data sharing.</p> <p>3. The federations and their membership will finance the necessary local federation staff to support the data training and technical assistance activities. This means that the membership increasingly recognizes the value of the services rendered and is prepared to pay the cost not financed by RDCAP.</p> <p>4. The government of the five CACP countries support and facilitate the existence and continuation of the federations and their data and training activities.</p> <p>5. RDCAP and the bilateral USAIDs coordinate their activities so as to mutually support the program and not put conflicting pressures on the federations.</p>

PROJECT OUTPUTS

MAGNITUDE OF OUTPUTS

MEANS OF VERIFICATION

ASSUMPTIONS FOR ACHIEVING OUTPUTS

- Each federation will establish a data base of technical and marketing information together with the necessary equipment (hardware and software) to operate it. In addition, each federation will establish ties with, as appropriate, with U.S. and other informational sources for non-traditional agricultural exports.

- Each Federation will develop a publication policy and will have produced a set of publications involving export production, post-harvest handling, marketing and computer information. (The exact number will depend upon the need of each country and federation).

- High-capacity micro-computers, 2 per federation, and 1 for the contract team, and appropriate software, will be purchased. Each system will include printers and a modem. Each federation will also have at least two linkages to market data resources.

- Software programs financed under the project will include the basic programs now in existence (e.g. Pro-Met, Fresh-Met); and these will be increased as new, more appropriate programs are developed during the life of project.

- Specialized courses will be offered in the interpretation of market and production data, accessed by computer facilities available in each federation.

2. TECHNICAL ASSISTANCE AND TRAINING

Technical Assistance and Training to Private Sector Individuals and Associations, Cooperatives and Public Sector export agents.

-Project team will be responsible for providing direct training to various persons and groups involved in the production and export of non-traditional ag. products.

Regional training programs will be included as an important part of the overall training assistance. Short-term technicians will supplement the work of the contract team.

MAGNITUDE OF OUTPUTS

- The exact number of courses and attendees will be developed after the arrival of the ROCAP Contract team. However, at least 2 courses per month will be held in the first year to 18 months of the project. Moreover, there will be a series of short (1-3 day) courses provided on an as needed basis to each participating federation. Two regional seminars per year will be conducted. The number of individual members who are assisted in gaining "hands on" technical experience in the development of non-traditional agricultural exports will be at least 50 per federation during the first 1-1/2 yrs. of the project, and will increase each year thereafter.

- Special emphasis will be placed on in-the-field training and assisting potential channel captains and other entrepreneurs in developing fully their skills in project-related areas.

- The number and specific content of the T.A. courses, workshops and seminars will be developed in collaboration with the federation's management and staff after the arrival of ROCAP specialists. Likewise, the exact number of additional courses or course improvements in the regional training institutions will be developed after the arrival of the ROCAP specialists and the development of a work plan between the federations and regional training institutions.

MEANS OF VERIFICATION

Number of trained channel captains, and producers and entrepreneurs who perform a part of the role of a channel captain, can be counted as well as the number of training sessions in groups and through individual assistance.

ASSUMPTIONS FOR ACHIEVING OUTPUTS

Adequate support will be supplied by the Federations and by regional support and educational institutions.

1. Export federations exist or early on will be created to further the export of non-traditional agricultural products. These federations may have other goals and activities but the export promotion function of these organizations will be clearly defined and sufficiently separated to enable them to carry out support for the purpose of the project at a national level.

2. The export federations of the five CACP countries and their membership view the advantage of regional cooperation to be sufficiently great so as to participate in joint training programs and technical data sharing.

3. The federations and their membership will finance the necessary local federation staff to support the data training and technical assistance activities. This means that the membership increasingly recognizes the value of the services rendered and is prepared to pay the cost not financed by ROCAP.

4. The government of the five CACP countries support and facilitate the existence and continuation of the federations and their data and training activities.

5. ROCAP and the bilateral USAIDs coordinate their activities so as to mutually support the program and not put conflicting pressures on the federations.

2. TECHNICAL ASSISTANCE AND
TRAINING

MAGNITUDE OF OUTPUTS

MEANS OF VERIFICATION

ASSUMPTIONS FOR ACHIEVING OUTPUTS

It is contemplated that these additional courses will cover at a minimum such topics as post-harvest handling, transportation, distribution channels, market knowledge, production technologies, as well as additional courses on using computerized data services and telecommunications systems.

- Specialized courses will be developed for public sector personnel desiring to participate in the project. These courses will be developed together with the regional training institutions and will consist of: export management, export economics, market information, transportation, post-harvest handling and distribution channels. The courses may be offered on a regional basis and/or together with selected federation training programs. It is anticipated that fees for these courses will not be charged until sufficient demand has been demonstrated. Once the value of these courses are realized fees will be applied to offset a portion of the institution's/federation's operational expense.
- A project Liaison Officer will also be hired under the project for five years. This individual will assist in project implementation and serve as the administrative and technical liaison to ROCAF and the bilateral USAIDs for the project.

ANNEX B

SIGNIFICANT DATES IN THE EVOLUTION OF THE PROEXAG PROJECT

	DATES
CONTRACT ADMINISTRATION:	
SIGNATURE OF THE ORIGINAL CONTRACT	09/29/86
AMENDMENT 1	10/06/86
AMENDMENT 2	02/10/87
AMENDMENT 3	08/03/87
AMENDMENT 4	11/12/87
AMENDMENT 5	07/22/88
AMENDMENT 6	09/27/90
AMENDMENT 7	07/12/91
AMENDMENT 8	08/28/91
AMENDMENT 9	09/30/91
CONTRACT ACTIVITIES COMPLETION DATE (CACD)	09/30/91
PROJECT ACTIVITIES COMPLETION DATE (PACD)	09/30/91
PROJECT MANAGEMENT:	
PROJECT START-UP	10/01/86
CONTRACTOR MOBILIZATION PERIOD	10/86 - 12/86
TEAM ORIENTATION IN CHEMONICS' HOME OFFICE	10/14/86
ARRIVAL OF CORE TEAM AT POST	11/86 - 12/86
LOGFRAME REFORMULATION	05/87
FIRST PROEXAG ANNUAL MEETING	07/87
DESIGN OF MONITORING/EVALUATION SYSTEM	07/87
EVALUATIONS OF PROEXAG (et. al.)	
MID-PROJECT EVALUATION ("A Collaborative Assessment of the Non-traditional Agricultural Export Project")	08/88 - 12/88
LAC/DR EVALUATION ("A Cross-Cutting Evaluation of NTAE Projects in the Lac Region")	10/88 - 03/89
CDIE EVALUATION ("Promoting Trade and Investment in Constrained Environments: AID Experience in Latin America and the Caribbean")	08/89 - 05/90
WID EVALUATION ("The Impact of Participation in Non-traditional Export Agriculture on the Employment, Income and Quality of Life of Women in Guatemala, Honduras and Costa Rica")	04/90 - 03/91
CDIE EVALUATION ("The Effectiveness of Service Delivery in Investment and Export Promotion Projects")	09/90 - 07/91

TOURS OF DUTY OF CORE TEAM MEMBERS

TEAM LEADER	
Edward Hurlston	10/86 - 03/88
John Lamb	04/88 - 08/91
COMPUTER USE SPECIALIST	
Bruce Brower	12/86 - 07/91
PRODUCTION SPECIALIST	
Jose Mondonedo	01/87 - 08/91
POST-HARVEST SPECIALIST	
John Guy Smith	10/86 - 11/89
Dale Krigsvold	01/90 - 08/91
MARKETING SPECIALIST	
Ricardo Frohmader	07/87 - 07/91
TRAINING SPECIALIST	
Jose Oromi	10/86 - 02/89

PERIODS OF ASSIGNMENT TO PROEXAG OF ROCAP MANAGEMENT

CONTRACTING OFFICERS	
Michael Kenyon	10/86 - 05/88
Stanley Nevins	06/88 - 07/88
John McAvoy	07/88 - 09/91
C.O. TECHNICAL REPRESENTATIVES (COTR)	
Gordon Straub	10/86 - 04/88
Ronald Curtis	05/88 - 09/91
Richard Clark	08/88 - 09/91
PROJECT MANAGERS	
Nancy Fong	10/86 - 08/87
Richard Clark	08/87 - 08/88
CONTRACTOR DE-MOBILIZATION	06/91 - 08/91

TECHNICAL MILESTONES

PRODUCTION AREA

INITIAL TECHNICAL REFERENCE PACKETS FOR

Tropical Exotic Fruits	08/87
Asparagus	09/87
Blackberries	10/87
Raspberries	10/87
Blueberries	10/87

VARIETAL INTRODUCTION AND TRIALS FOR

Asparagus	03/89, 09/90
Blackberries	03/88, 05/89
Red Raspberries	03/88, 03/89
Blueberries	03/88
Edomame	05/91
Heliconias	06/88
Flowering Gingers	06/88

Proteas	08/89, 10/89
Anthurium	06/88
Boronias	08/89, 10/89
Colored Callas	08/89, 05/90
Melons (CR)	02/87

CROP MANAGEMENT TRIALS FOR

Asparagus	03/89
Blackberries	03/88, 05/89
Red Raspberries	03/88, 05/89
Mangos	12/87

PEST/DISEASE CONTROL STUDIES UNDERTAKEN

Stylet Oil Use for Aphid-borne Virus	03/87
Melon Virus Epidemiology	12/89
Asparagus Pest/Disease Identification	12/89

INITIAL COST OF PRODUCTION ANALYSES COMPLETED 11/87

POST-HARVEST AREA

MODIFIED ATMOSPHERE TESTS

TECTROL Shipment of Strawberries to U.S.	03/89 - 04/89
BANAVAC Shipment of Melons to Europe	01/91 - 02/91

PRACTICAL GUIDE TO PRODUCING AND EXPORTING 6/88
PERISHABLE AGRICULTURAL COMMODITIES COMPLETED

UCAL GUIDE TO POST-HARVEST HANDLING OF CUT 6/88
FLOWERS TRANSLATED AND PUBLISHED IN SPANISH

FIRST POST-HARVEST HANDLING COURSE OF 7/88
UCAL/DAVIS HELD IN GUATEMALA UNDER PROEXAG
CO-SPONSORSHIP

REGULATORY AREA

ILLEGAL RESIDUES FOUND ON GUATEMALAN SNOWPEAS 10/88
PASA AGREEMENT BETWEEN USAID/ROCAP AND USDA/OICD
SIGNED TO ACCESS SERVICES OF FDA AND EPA 11/88
IR-4 MINOR USE REGISTRATION PROCESS ESTABLISHED 11/88
FIRST PROEXAG-SPONSORED VISIT BY FDA OFFICIALS
TO GUATEMALA 12/88
ALAR ON APPLES SCARE DEVELOPED IN U.S. 02/89
CYANIDE FOUND ON IMPORTED CHILEAN GRAPES 03/89
FIRST PROEXAG BULLETINS ON EPA PESTICIDE
REGULATIONS DEVELOPED AND DISTRIBUTED 04/89
AID/EPA WORLDWIDE MEMO OF UNDERSTANDING
FINALIZED WITH CENTRAL AMERICA AS PILOT TEST 05/89
FIRST ASSESSMENT OF AGRICULTURAL LABS BY
FDA COMPLETED UNDER PROEXAG SPONSORSHIP 07/89
FIRST SHORT COURSE ON RATIONAL PESTICIDE USAGE
DESIGNED, FIELD-TESTED AND THEN REPLICATED 08/89

FIRST GLOBAL REQUEST FOR CHANGE IN ADMISSIBILITIES SUBMITTED TO APHIS	09/89
FIRST GLOBAL REQUEST FOR CHANGE IN ADMISSIBILITIES DECLINED BY APHIS	11/89
REGIONAL FEDERATION OF AGROCHEMICAL ASSOCIATIONS (FECCOPIA) FORMED WITH PROEXAG SUPPORT	03/90
FIRST PROEXAG-SPONSORED VISIT BY EPA OFFICIALS	05/90
FIRST REGIONAL WORKSHOP ON PESTICIDE RE-REGISTRATION HELD BY PROEXAG	12/90
RESPONSIBILITY FOR PESTICIDE BULLETIN SERIES PASSED TO CATIE	06/91
REVISED PESTICIDE BULLETINS ISSUED BY CATIE	01/92

TRANSPORT AREA

FIRST CONTAINER UTILIZATION STUDY FOR MELONS COMPLETED	09/87
USDA MANUAL ON TRANSPORTING TROPICAL PRODUCTS TRANSLATED BY PROEXAG	09/87
FIRST COMMERCIAL OVERLAND SHIPMENTS THROUGH MEXICO (TransFrios) DONE	12/87
FIRST REGIONAL RATE NEGOTIATIONS WITH CALA HELD	09/89
FIRST SUCCESSFUL NON-CALA MARITIME SERVICE TO FLORIDA (Tropical Shipping)	1989/90
FIRST REEFER SERVICE TO CALIFORNIA ESTABLISHED (NedLloyd Lines)	01/90
FIRST INSTANCE OF A BANANA MULTINATIONAL PROVIDING COMMERCIAL SERVICE FOR PERISHABLE CARGO (Chiquita)	1988/89

MARKETING AREA

FIRST 'TERMS OF SALE' TRAINING SERIES HELD IN CENTRAL AMERICA	06/87
FIRST TRAINING ON 'PERISHABLE AGRICULTURAL COMMODITIES ACT' HELD IN THE REGION	09/87
U.S. OBSERVATION TOURS COMPLETED FOR:	
Melons	07/87
McAllen Market Access	10/87
Asparagus	03/88, 03/89
Cut Flowers	11/88
Brambleberries	06/89, 08/90
Raspberries	09/89
Seedless Watermelon	06/90
MARKET INFORMATION OBSERVATIONAL TOUR TO FLORIDA AND EUROPE COMPLETED	04/90
FIRST ATTENDANCE AT INDUSTRY SHOWS WITH CLIENT EXPORTERS AND COUNTERPARTS	
UFFVA Convention/Exposition	02/88
PMA Convention/Exposition	10/88
FIRST ANNUAL NTAE SHOW FOR CENTRAL AMERICA (AGRITRADE '88 IN GUATEMALA)	12/88
FIRST ATTENDANCE AT EUROPEAN SHOWS	

ANUGA World Food Show	10/88
SIAL Food Show	10/89
FIRST SUCCESSFUL COMMERCIAL SHIPMENTS OF	
Asparagus to the U.S.	1988/89
Blackberries to the U.S.	1988/89
Red Raspberries to the U.S.	1988/89
Seedless Watermelon to the U.S.	1988/89
Colored Callas to the U.S.	1990/91

INFORMATION SYSTEMS AREA

FAX MACHINES DONATED AND INSTALLED FOR	
FIRST TIME IN COUNTERPART ORGANIZATIONS	06/87 - 12/87
COMPUTER SYSTEMS DONATED AND INSTALLED	
IN COUNTERPART ORGANIZATIONS	03/87 - 12/87
FIRST TRAINING IN WORDPERFECT, LOTUS 1-2-3,	
PARADOX, PLANPERFECT FOR COUNTERPARTS	03/87
AGRIDATA DATABASE INTRODUCED TO REGION	06/87
RACSA (CR PACKET SWITCHING NETWORK)	
SHOWN HOW TO PROVIDE SERVICE TO REGION	10/87
PROEXAG COMMODITY PRICE DATABASE	
DESIGNED, INSTALLED AND OPERATIONAL	01/88
COST-OF-PRODUCTION SOFTWARE DESIGNED	04/89
USE OF AGRIDATA ESTABLISHED IN MOST	
OF THE REGION	1989
INTRODUCTION OF WORDPERFECT 5.0	
IN SPANISH TO CENTRAL AMERICA	05/89
RACSA NETWORK NODES SET UP IN GUATEMALA	
EL SALVADOR AND HONDURAS	1990
NTAE DOCUMENTATION CENTER SET UP	05/90
MICRODIS LIBRARY SOFTWARE PROCURED AND	
INSTALLED FOR FIRST TIME IN REGION	08/90

ANNEX C

MAJOR ACCOMPLISHMENTS OF THE PROEXAG PROJECT BY CROP

EDIBLE CROPS IN FRESH FORM

ASPARAGUS

1. Through a diagnostic analysis of the nascent asparagus industry in Central America, determined that the principal constraints were inappropriate varietal selection and unproven crop management systems for continuous culture.
2. Compiled an asparagus information packet based on the most appropriate and technically sound literature available
3. Introduced several new, high-yielding cultivars to Guatemala, Costa Rica, Honduras, El Salvador, and Panama
4. Designed, established and monitored adaptation trials for these cultivars in five countries under varying agroecological conditions, then formulated recommendations accordingly
5. Designed, established and monitored crop management trials in all five countries, with special emphasis on harvesting regimes
6. Organized, sponsored and carried out two asparagus production and marketing tours for some 25 people to sites in the U.S., thereby raising levels of awareness of U.S. technology and marketers
7. Assisted selected growers to establish and/or upgrade marketing linkages in the U.S., then encouraged the receivers to provide technical assistance to associated growers, especially in quality control at the packing shed.
8. Conducted a survey of foliar diseases of asparagus and provided information on control techniques
9. Promoted the carrying out of research and extension by a local consulting group as a means of reinforcing local capabilities
10. Served as principal promoter and facilitator in the growth of the asparagus industry to an estimated 500 has. of commercially viable plantings, most of them in Guatemala

CANTELOUPE

1. Designed, conducted and monitored a pilot program in melon production in Guanacaste Province of Costa Rica, which was then taken over by CINDE/DIVAGRI and became one of the two major efforts that ultimately led to the establishment of Costa Rica as the first or second largest melon producer in Central America
2. Encouraged and promoted the formation of the first melon-growers' association in Costa Rica
3. Disseminated to a broad audience of growers the stylet oil treatment technology for controlling aphid-borne (and potentially whitefly-borne) virus in melons
4. Organized, sponsored and executed a region-wide epidemiological survey on the incidence, types and vectors of viruses affecting canteloupes and other cucurbits, resulting in the identification of various previously unidentified virus groups and the discovery that not just aphids, but also whiteflies are serious vectors

5. Provided on-site and classroom guidance to producers throughout Central America in proper selection, packing and quality control, especially against salmonella, cholera and other microbacteriological pathogens
6. Helped resolve satisfactorily plant quarantine problems arising from the sudden appearance of gall midge on melons exported to the U.S.
7. Assisted numerous grower/shippers around the region to upgrade their receivers in the U.S., thereby reducing risk and often increasing net returns
8. Encouraged and facilitated the first commercial overland transport service for melons through Mexico to McAllen, Texas
9. Assisted a leading grower in Honduras to ship his first melons to Europe using modified atmosphere transport technology.
10. Provided an expert in melon nutrition to improve fertilizer use
11. During the 1991/92 season, assisted several Nicaraguan growers to establish the first 78 has. of canteloupe production and successfully export product to the U.S. market

HONEYDEW (many of the items listed above for canteloupe also apply here)

1. Introduced honeydew melon production to Nicaragua, thereby assisting growers to successfully break into the U.S. market for the first time in the 1990/91 season with some 300 has. of production, then expanding in 1991/92 to 890 has. (the latter production achieved very good prices and high profitability)

SEEDLESS WATERMELON

1. Promoted Sun World International's coming to Central America to test its proprietary variety of seedless watermelon with growers in Guatemala, Honduras, El Salvador and Costa Rica.
2. Nurtured the seedless watermelon deal until it had become commercially viable in at least one of the three countries, resulting in sales from Honduras during the 1990/91 season of about \$500,000 FOB POEntry

BLACKBERRIES

1. Introduced promising cultivars to Guatemala, Costa Rica, Honduras, Panama and Nicaragua
2. Designed, sponsored and monitored variety trials under varying agroecological conditions and management regimes in those countries
3. Developed and later refined a cultivar/nursery source guide for blackberries
4. Developed a pruning guide for blackberries in Central America
5. Organized and supervised a blackberry production and marketing tour of the U.S. for selected growers from the region
6. Assisted in the initial selection and continual upgrading of receivers in the U.S.
7. Developed a comprehensive but practical production guide for blackberries in Central America
8. Provided trouble-shooting in production, post-harvest handling and marketing to make sure the new industry got well-established (as of this writing there are 100-150 has. established in Guatemala, and the

profitability has been good enough to provoke substantial interest in Panama, Costa Rica and Honduras as well)

RASPBERRIES

1. Introduced promising cultivars to Guatemala, Costa Rica, Honduras, Panama and Nicaragua
2. Designed, sponsored and monitored variety trials under varying agroecological conditions and management regimes in those countries
3. Developed and later refined a cultivar/nursery source guide for raspberries
4. Drafted a production guide for raspberries in Central America
5. Organized and supervised a raspberry production and marketing tour of the U.S. for selected growers from the region
6. Assisted in the initial selection and continual upgrading of receivers in the U.S.
7. Provided trouble-shooting in production, post-harvest handling and marketing to make sure the new industry got well-established (as of this writing there are 25-40 hectares established in Guatemala, and the crop has proven to be very profitable, however further research is needed on rosetting and other production issues before more extensive plantings or entry by unsophisticated growers can be recommended)

STRAWBERRIES

1. Conducted applied research to validate for Guatemala the feasibility of using modified atmosphere (TECTROL) technology to ship strawberries by sea rather than by air to the U.S., thereby lowering costs, extending the season and enhancing competitiveness
2. Carried out a literature search aimed at proving that strawberries are not a preferred host of the Mediterranean fruitfly, so that a ban on the import of Costa Rican strawberries into California would not spread to other source countries, other States, and/or related crops such as brambleberries; and then coordinated a successful effort to get the prohibition rescinded

MANGOS

1. Conducted applied research on flower induction on the different mango varieties in Guatemala, Costa Rica and Honduras using varying combinations of cultural practices and growth regulators successfully utilized in the Philippines to aim production at the most profitable market windows
2. In the Honduran case, Haden variety mangoes produced as early as March and April through the application of these flower induction technologies were successfully shipped to Europe during high-price windows starting in the 1989/90 season
3. Assisted in identifying viable receivers in Europe for a major producer in Guatemala and another in Nicaragua, and facilitated the deal-making process
4. Monitored the ARS-controlled research process and APHIS-controlled regulatory process being followed to test and approve the hot water

and other treatments for application on mangos destined to the U.S. market; then worked to clarify and disseminate information concerning the approval process, and facilitate actual use of the HWT treatment (the first plant is now being designed, for Nicaragua)

SNOWPEAS

1. Made a substantial effort to clarify EPA regulations concerning agrochemicals permitted for use on snowpeas destined for the U.S., then worked closely with FDA, the snowpea growers' subcommittee, and GEXPRONT to improve pesticide use, comply with EPA/FDA regulations, and develop alternative means of pest/disease control

PINEAPPLES

1. Developed a Spanish-language guide to producing, harvesting and packing pineapples, aimed at medium-scale growers

COLE CROPS

1. Conducted an assessment of the feasibility of growing broccoli, cauliflower, and brussels sprouts as new export crops from Panama and Nicaragua
2. Provided technical assistance and training in postharvest handling and marketing for Guatemalan growers of broccoli interested in shipping broccoli to the States in fresh form
3. Distributed considerable literature on the use of *Bacillus thurengensis* in integrated pest management programs designed to control lepidopteran larvae that were causing rejections at ports of entry.
4. Conducted an overview assessment of the cole crops industry in Panama, resulting in recommendations for improvement

EDIBLE CROPS IN PROCESSED FORM

COLE CROPS

1. Provided assistance in crisis management to contain the damage done to the Guatemalan freezing industry and to producers of broccoli and other cole crops when a pesticide donated by Italy was misapplied to crops destined for the U.S.
2. Encouraged and facilitated experimentation by Vendome Ltd. on the use of the sous vide process for preparing consumer packs of pre-cut broccoli

EDOMAME

1. Introduced the most promising cultivars from Japan for adaptation trials in Guatemala, El Salvador and Honduras
2. Facilitated contact with Japanese trading companies interested in sourcing this immature soybean in frozen form to Japan, indirectly resulting in the first trial shipments for what may become a major NTAE crop in the future

ORNAMENTAL CROPS

ROSES

1. Organized, sponsored and managed a market orientation tour to the U.S. for some six growers from Guatemala, resulting in a change in business strategy for some participants, as well as establishment of new market linkages
2. Organized follow-up visits by receivers already visited, as well as others, resulting in new, mutually beneficial sourcing arrangements
3. Provided periodic technical assistance and training in all aspects of rose production to many of the producers in Guatemala who contributed to a rapid increase in rose exports over the past several years

CARNATIONS

1. Helped prepare a feasibility study/businessplan/loan request package for a major new producer of carnations in Guatemala, then once the project was funded, facilitated initial marketing linkages and provided regular technical assistance, resulting in expansion to about 15 hectares of export-oriented acreage under plastic

CHRYSANTHEMUMS

1. By providing regular technical assistance to Guatemalan growers, helped raise the quality of cut flowers exported to neighboring countries

COLORED CALLAS

1. Designed, organized and carried out adaptation trials for new cultivars imported from New Zealand
2. Provided initial technical assistance as well as on-going monitoring to ensure that this crop reached commercial viability; resulting in the first export shipments by two companies out of Guatemala to the U.S. and then self-financed expansion by those growers

ANNEX D

MAJOR ACCOMPLISHMENTS OF THE PROEXAG PROJECT BY THEME

PRODUCTION PRIORITIES

1. Optimal Varietal Selection

PROEXAG devoted significant effort to introducing and testing improved cultivars of asparagus, red raspberries, and blackberries for their adaptability to different growing conditions within Central America and for their apparent commercial promise.

In the case of asparagus, the varieties initially tested included: UC157 F1, UC157 F2, Brock Red-19, Brock Blue-19, UC Ida Lea, Jersey Giant and UC 72. Of these, UC 157 F1 proved to be the best variety overall across Central American microclimates and under varying conditions. (Moreover, UC157 F1 yielded 39% more than UC157 F2, which was considered the variety of choice in Guatemala when PROEXAG began). Jersey Giant appears to be the second best variety in terms of yield and mortality. Although UC Ida Lea is also promising, insufficient trials have been made to reach firm conclusions yet.

With respect to blackberries, the Texas-type blackberries, especially erect thorny cultivars such as Brazos, Rosborough and Brison proved to do very well in Central America. As of this writing, the blackberry industry in Guatemala, which was based on these cultivars, has become a commercial success, and growers in Costa Rica, Panama and Nicaragua are planning to expand their plantings as well.

Red raspberries command much higher prices and can aspire to a larger and more open market than blackberries, but production technology is more problematic for Central America. In PROEXAG's early years, both Summer-bearing types (e.g. Meeker) and Fall-bearing types (e.g. Autumn Bliss, Heritage, Summit, Ruby and Fall Gold) were introduced, starting with Guatemala and Costa Rica. PROEXAG trials with Meeker, however, as well as independent trials by Guatemalans of other varieties such as Chilcotin, Williamette and Titan all confirmed that Summer-bearing varieties grew vegetatively, but tended not to flower in the second year, and were very prone to rosetting. Among the Fall-bearing types, some such as Fall Gold did not grow tall. Heritage and Ruby also tended toward rosetting. Summit was sometimes affected by rosetting, but Autumn Bliss was the least affected. All four Fall-bearing types responded well to the application of Gibberellic Acid as a growth hormone. But in on-farm trials it is often difficult to differentiate between the effects of different management practices and intrinsic adaptability, so PROEXAG's conclusions to date are tentative for this crop. Autumn Bliss and Summit appear to be the most promising red raspberry varieties for the region, yet Heritage and Ruby should not be discarded until more definitive results are in.

PROEXAG also introduced improved cultivars of various other crops: heliconias (Andromeda, Golden Torch, Holiday, Caribe Purple, Jamaican Dwarf, Caribe Yellow and Sexy Pink); flowering gingers (Alpinia spicata, yellow and

white); curcuma rosacane; anthurium (Nitta, Marian Seefurth, Asahi, Zorayda Pink; proteas (Protea cynaroides-King Protea, Protea nerifolia-Mink Protea, Leucospermum-Firewheel, Leucadendron-Silvan Red); colored callas; and kangaroo paws.

Several of the heliconia and flowering ginger varieties grew well, but the PROEXAG team decided to stop its development effort for these crops after it became clear from market analysis that tropical flowers had little chance of expanding beyond a niche product and that Central America had relatively little comparative advantage in them.

The boronias and curcumas were not pursued beyond the initial introductions for similar reasons. The proteas introduced by PROEXAG, on the other hand, as well as other cultivars handled by the sole Central American grower, were successfully exported from El Salvador, and this crop may merit further attention during a follow-on project.

Happily, in the case of colored callas, the PROEXAG introductions were a rapid success--saleable at high prices in the local market in Guatemala and readily exportable to the United States. As a result, the farmer who initially cooperated in the trials has undertaken a major expansion, buying additional planting material from New Zealand. And another grower in the same town has also entered the business. Both are already exporting to the United States.

Finally, in its last year, PROEXAG introduced the first cultivars of edomame, a type of soybean which is harvested immature, processed through freezing and then shipped to Japan, where it is consumed in great quantities as a snack to accompany alcoholic beverages. After identifying the most promising varieties (Kegon and Yusuuzumi) available from Taiwan and Japan, the project procured seed for trials with several cooperating farmers in Guatemala and El Salvador, as well as with FUSADES in El Salvador and FHIA in Honduras. Initial results were favorable enough, especially with the Kegon variety, to cause the Japanese trading company Nissho Iwai and the supermarket chain Seiyu to decide to send their buyers to Guatemala in December of this year. And at least one of the growers--a freezing company--is already moving into commercial production.

2. Appropriate Usage of Agrochemical and Biological Inputs

Starting in about 1988, agrochemical usage was becoming a very important issue--first for environmentalists and consumer advocates, then for regulatory agencies and finally for consumers themselves. As interest rose within the worldwide horticultural industry, it became clear that continued growth in non-traditional agriculture from Central America depended on more rational and better controlled use of agrochemicals, both in production and post-harvest handling.

PROEXAG took the lead in this area first by creating a series of bilingual bulletins that listed all agrochemicals registered by EPA for use on 10 crop groups of interest to Central America. Once representatives from our counterpart entities had been trained to use and update the bulletins, and the bulletins had been widely disseminated in private and public sector, we then expanded the series to cover an additional 10 crop groups. The toward the end of the project, we transferred responsibility for the whole effort to CATIE

in Turrialba, Costa Rica, so as to institutionalize this information product.

In effect, the EPA bulletin series marked the beginning of a major thrust by PROEXAG that continued through the life of the project. Other components included: (1) systematic monitoring, compilation and dissemination of information on the changing regulations and procedures of EPA, FDA and similar authorities in Canada, Japan and the major European countries; (2) financing through EAP Zamorano the design, pilot testing and initial delivery of a 1-2 week course on rational pesticide usage aimed at extension agents, foremen, agrochemical representatives, and field applicators; (3) the delivery of numerous talks, seminars and field days; (4) logistical support for visits by EPA and FDA authorities; (5) technical assistance to growers, shippers, and export support organizations; (6) cooperation with researchers on IPM and other pest/disease control systems aimed at improving usage of chemicals; (7) support for efforts by the local agrochemical industry to police itself (including the formation of a region-wide federation of agrochemical associations called FECCOPIA); (8) liaison with the U.S. horticultural industry; and (9) crisis management.

Although this effort was region-wide, Guatemala tended always to be the focal point of these activities, in part due to the diversity of its crop mix and also because by 1990 its problem-prone snowpea industry alone was employing some 3-5,000 families and producing more than \$7 million in annual exports in fresh and frozen form. However, other specialty crops such as french beans, large volume crops such as melons, and crops for freezing such as broccoli, also ran into significant pesticide use problems that demanded PROEXAG collaboration from time to time.

3. Virus Control

As melons (honeydews, canteloupes and specialty melons) continued to rise in export volume over the life of PROEXAG, reaching more than \$35 million in value by 1990, the costs and potential risks associated with virus infestation in melons also rose apace. Recognizing that virus could reduce exportable yields from 15-85% on any given field, early on in the project we elected to respond to the challenge. The first step was to convince the sponsor and developer of a promising control technology for the aphids that were thought at the time to be the only vector to make their stylet oil-based technology widely available.

However, as the problem continued to grow, the second step was to expand a pilot research effort on virus epidemiology being undertaken by the University of California at Riverside under FUSADES' auspices in El Salvador, so that the same research could be done all across the region. The results indicated that not just one virus was involved but as many as seven, and that not just aphids but also whiteflies were serving as vectors.

This greatly complicated the pest/disease control problem, but did help guide a joint effort between the Melon Growers' Association of Choluteca and FPX of Honduras to contract with EAP Zamorano to develop appropriate control techniques. Initial results reported at the Third Annual Meeting of the IPM-Melon Group in August of 1991 were very promising, but further research will be needed to mitigate or resolve the virus and whitefly problem in melons and other cucurbits--a problem that recently wiped out huge volumes of

production of melons and many other crops in the the Southwestern U.S.

4. Cycle Manipulation

PROEXAG efforts in the area of cycle manipulation derived from a desire on the part of cooperating growers of mangoes, asparagus and brambleberries to enhance their competitive position and profitability by influencing the normal growth cycles of these crops so as to concentrate exportable supply in the periods of greatest scarcity in the marketplace:

- For mangoes, this meant trying to move the onset of production back from late April-early May to March, or even February
- For asparagus, this meant aiming for two possible windows, July-August or December-January
- For raspberries and blackberries, since abundant supply exists in the U.S. only from June through October, this meant that a 6 or 7-month window remained to which Central America could aspire

In the case of asparagus, substantial progress was made in cycle manipulation thanks to a series of PROEXAG-sponsored crop management trials designed to test yields under different regimes for harvesting (i.e. one cut/year, two cuts/year, or continuous cutting), fertilization, water management and pest/disease control, and to optimize net returns to farmers based on our findings.

In the case of mangoes, experimentation with growth regulator mixtures based on potassium nitrate did advance flowering for the Haden variety, enabling Honduras to successfully hit a higher-priced window in Europe, but the larger volume variety Tommy Atkins generally failed to respond. Further work is needed under the PROEXAG follow-on project EXITOS to achieve the best possible combination of synchronized tree growth, reduction of endogenous growth inhibitors, and stimulation of reproductive growth in specific trees within a grove.

POST-HARVEST PRIORITIES

1. Appropriate Usage of Agrochemicals

In addition to the activities described above under production for this theme, in the postharvest area special attention was given to providing technical assistance in the appropriate use of post-harvest fungicides and bactericides. The most serious actual or potential postharvest pest/disease problems addressed during the project were botrytis, salmonella and cholera.

2. Transfer of Recommended Postharvest Handling Practices

Throughout the project technical assistance and training were provided in quality control techniques aimed at avoiding or minimizing pest/disease problems, maximizing exportable yields and obtaining the best possible quality and condition of arrivals. In addition to the advice given on a routine basis by members of the core team whenever they visited packing sheds or helped put on seminars, various experts in key subject areas such as pre-cooling, refrigeration, and perishables transport were brought in to address specific needs. And several manuals were developed (for example, the

first Manual on Postharvest Handling of Cut Flowers developed in Spanish in conjunction with the University of California at Davis).

3. Introduction of Modern Packing/Packaging Technologies

Early on in the project, the PROEXAG team began collecting sample boxes for crops that were new to the region (e.g. finger bananas), that required improvements in packing (e.g. asparagus and red raspberries) or that were destined for new markets (e.g. fresh baby corn for Europe). We also donated packaging materials to selected growers for trial shipments of pre-packed baby vegetables, french beans and snowpeas, which in some cases led to new export deals.

4. Transit and Shelflife Extension

As described in annex C, the team organized and carried out successful validation experiments to show that modified atmosphere (TECTROL) packing and shipping technology could be applied on strawberries to make maritime shipment possible from Guatemala. A transit/shelf life of 27 days was obtained.

On another occasion we joined with a Honduran melon grower and FPX to test the use of modified atmosphere (BANAVAC) packing technology as a means of extending transit life for canteloupes being sent by commercial maritime carrier to Europe. In this case, PROEXAG's European Marketing Specialist Francisco Stargardter was able to verify that the canteloupes arrived in good condition after an 16 to 18-day voyage.

5. Improved Dissemination of Regulatory Information

Throughout the project, members of the team systematically monitored, compiled, and disseminated to interested grower/shippers a wealth of technological and regulatory information concerning post-harvest handling. Key topics that we tracked included: changes in FDA labelling requirements (e.g. country of origin, nutrition, use of waxes); changes in allowable fumigants at port of entry (e.g. EDB, methyl bromide); the use of differentially permeable films for packaging; and new techniques or applications of modified and controlled atmosphere technology.

In addition, when specific post-harvest problems arose, such as the gall midge in melons or both Epinotia and Maruca in snowpeas and french beans, the PROEXAG post-harvest specialist provided assistance to many shippers in understanding the problem, persuading APHIS to allow time to find a suitable remedy, and then carrying out whatever remedial action was needed.

PROEXAG also made repeated attempts to expand the list of crops admissible from Central America to the U.S., but unfortunately our efforts were unsuccessful because APHIS chose not to run new enterability proposals through the approval process on an individual basis, but rather to accumulate them in a "delayed list" which is not expected to be published until 1992.

6. Monitoring, Furtherance and Dissemination of Fruitfly Control Technologies

Since the Mediterranean fruitfly represents the single most important quarantine action pest for Central America, the PROEXAG team plus Plant Quarantine Specialist Mary Quinlan devoted significant effort to identifying, monitoring research being conducted under ARS auspices, and encouraging regulatory progress toward ARS/APHIS approval of the hot water treatment for mangos, the vapor heat treatment for papayas and mangos, and other plant quarantine actions with respect to papayas.

TRANSPORT PRIORITIES

1. Increased Freight Capacity from the Region to the U.S.

During PROEXAG's earlier years, grower/shippers were very concerned about the absolute shortage of reefer containers during the peak NTAE season. In response to this problem, Transport Specialist Pam Michel first designed and carried out a survey of planting intentions for melon growers (the principle users of reefer containers), and then updated it in successive months as actual plantings, weather patterns and shipping decisions evolved. Since this helped the shipping companies allocate containers and also helped growers arrange shipping, both groups appreciated the effort. Pam and the team repeated the effort the following year, but in that case the main purpose was to help the region-wide Transport Users' Committee (led by the Melon Exporters' Association of Honduras) to obtain a roll-back in an announced 10% rate hike.

Another method of alleviating the shortage and exerting downward pressure on rates was to seek the entry of new carriers. In this sense the entire PROEXAG team, but especially Pam Michel, devoted substantial effort to encouraging, facilitating and guiding grower groups, transport user groups, export support organizations and responsible commercial carriers to explore, analyze and pursue lower cost or alternative transport routes and services for perishable commodities. One conspicuous success was the entry of Tropical Shipping as a seasonal carrier of melons from Honduras to Florida. While PROEXAG was approached for help by many other potential carriers, we were careful about responding because businesses based on the seasonal transport of refrigerated perishables are very fragile. Indeed many efforts that we chose not to help in a major way did fail--e.g., Tampa Bay Shipping, CASHIP and Fourchon Lines.

Finally a third method of alleviating the transport shortage (while also diversifying ports of exit and entry) was to encourage the multinational banana companies to carry perishable cargo above deck. After initially resisting the idea, first Chiquita, then Del Monte, and finally Dole all began carrying NTAE cargo, mostly from their captive or associated growers, but in some cases on a commercial basis.

2. Diversification of Exit and Entry Ports for C.A. Produce

Cognizant of the fact that at the start of the project about 85% of the volume of NTAE crops produced in Central America for the North American market entered through the South Florida ports (Miami International Airport, the Port of Miami and Port Everglades), all throughout the project we worked to diversify ports of entry into the U.S. (and where necessary, to diversify ports of exit as well).

The first port targeted was New Orleans. Through a concerted effort of selected growers, receivers, a cold storage company, and an interested freight forwarder/customs broker, trial shipments were made that proved that NOLA could handle the cargo in a competent fashion despite many years outside the business. Unfortunately, however, in the process it also became clear that NOLA would become competitive with South Florida ports only after: (1) an adverse freight cost differential was removed; (2) local production or imports from other sources rose enough to be able to create the mixed loads desired by end-users; and (3) one or more major produce receivers chose to open up operations there. Notwithstanding repeated attempts by the New Orleans Port Authority and other interested companies, to this day those conditions have not been met.

After this initial experience, the PROEXAG team changed its strategy. Although ports of entry can be important concerns if their cost structure is out of line, if they become overloaded, or if the receiver infrastructure built around them is somehow deficient, we concluded that our real concern should be to diversify end-markets and expand market penetration so that sudden peaks in production and/or rising production over the years did not result in price drops.

That realization changed the way we looked at ports. For example, Port Hueneme in Long Beach, CA took on added importance as a gateway to the West Coast. So during the last two years of the project, Chemonics tried to encourage serious companies such as Tropical Shipping to set up a weekly reefer container service between the Pacific ports of Central America and California. As of this date no weekly service has been established, but at least biweekly service by Ned Lloyd Lines was set up. And in that case, the same carrier continued on to Japan, which made it possible to explore possible honeydew shipments to Japan.

3. Achievement of Routine Mexican Overland Transport

In its early years, when a shortage of refrigerated containers and the high cost of maritime cargo represented serious constraints to NTAE development, PROEXAG decided to work closely with an trucking entrepreneur in Guatemala to help get the first commercial overland transport service through Mexico started. Although volumes never grew as well as expected, the opening up of this new alternative did put pressure on maritime freight rates for perishables, and helped pry open the West Coast markets as well. To this day, the service continues to be used by some exporters in Guatemala, El Salvador, Honduras and Nicaragua to get their product to the Southwest. And the same overland carrier also serves Mexico City and Cancun, which are becoming more interesting as the Mexican market expands and as the North American Free Trade Agreement approaches reality.

4. Improvement in Transport and Storage Infrastructure and Services within/from the Central American Region

PROEXAG's main activities in this area included: (1) orientation throughout the region to the unique characteristics of transporting perishable cargo; (2) publication of a spanish-language version of USDA's Manual for the Transport of Perishables; (3) assistance in developing negotiating stances and strategies with the Central American Liner Association; (4) strategic advice

given to CINDE on maritime transport infrastructure and service improvement for Costa Rica; and (5) strategic advice to APENN and the Government of Nicaragua on requirements for NTAE transport development in that country.

MARKETING PRIORITIES

1. Increase Marketing Sophistication Among Shippers

Throughout the project, PROEXAG's Marketing Specialist and his assistants (indeed the whole team) took advantage of every opportunity to raise the level of understanding of growers, exporters and counterpart staff about target markets. Overview seminars on NTAE opportunities in the U.S., Canada, and Europe were held at least several times in each country, with differing audiences each time. Market-specific seminars on each of these target markets were also held repeatedly. Segment-specific seminars or presentations were made over and over again for fresh produce, processed produce, and cut flowers. Crop-specific seminars and talks were held in all countries for the highest priority crops for that country. Thematic seminars were held on the Perishable Agricultural Commodities Act, terms of sale, and the mechanics of produce exporting. Guest speakers recognized in the U.S. industry were brought in for presentations at AGRITRADE and other regional conferences, and a Senior Advisory Group of seasoned executives was established to advise the project team and our counterparts on trends in the industry.

In addition, orientation tours were held in the U.S. for actual or prospective growers of asparagus, cut flowers, brambleberries, melons, and seedless watermelon. Visits were organized to key terminal markets in Miami, Boston, New York City, New Orleans, San Francisco and Los Angeles, as well as to key distribution centers such as Pompano Beach, Florida. And trips were made to major ports of entry such as: the Port of Miami; Port Everglades; the Port of New Orleans; and McAllen, Texas.

PROEXAG also provided in-service training to exporters and counterparts in conjunction with the major industry shows--the PMA, UFFVA, ANUGA and SIAL.

Finally, to complement these training activities, the PROEXAG office collected and disseminated on a continual basis myriad articles, papers, reports and studies written on the structure of the horticultural sector, changes in consumer preferences, marketing and merchandising practices, and trends in supply and demand.

2. Enhanced Access to Timely Market Information

PROEXAG placed great emphasis on improving access to timely market information on the part of growers, grower/shippers, exporters, analysts and export promotion personnel. The project's first action in this regard was to co-finance the establishment and operation of a Miami office of the Market News Service of USDA's Agricultural Marketing Service so that it could provide daily reports throughout the winter season on products of interest to the CBI countries. PROEXAG was always the first entity in Central America to receive daily faxed reports on volumes, prices, quality and condition of priority products reaching both Pompano Beach and the Miami

Produce Center.

Early on in the project, the team also worked with PRONET, the principal supplier of electronic data for the produce industry, to try to tailor their system to Central American needs. And through a subcontract we also worked extensively with AGRIDATA, the largest supplier of electronic data to the agricultural sector in the U.S., to try to make direct electronic communications both efficient and cost-effective. Unfortunately, in both cases the cost of international phone calls needed to retrieve data proved prohibitively high, so we decided to suspend these lines of action indefinitely.

Our back-up response, however, was to design a Commodity Price Database (CPD) into which daily price reports from USDA/AMS/MNS could be inputted to create an historical record of prices for some 20 different commodities in key markets within the U.S. The CPD allows for selective retrieval against many different descriptors and also enables users to customize reports.

The CPD proved to be a very useful and popular system, but it was only as good as the quality of data put in it, so our Computer Utilization Specialist organized an observational tour aimed at assessing that data--going not just to USDA's MNS but also to UN/ITC's Market News Service in Geneva. This tour enabled the PROEXAG team and other participants to acquire a sophisticated but realistic understanding of the strengths and limitations of such reporting systems, then pass that knowledge back to client exporters and growers.

These initiatives notwithstanding, in the end we kept coming back to the conclusion that faxed reports, phone inquiries, and direct contact between buyer and seller remain the best sources of timely, accurate and useful marketing data.

3. Diversification/Upgrading of Receivers

Throughout the project, the PROEXAG marketing staff also sought to continuously upgrade, and when appropriate, to diversify receivers of NTAE products. Even before any specific cases had arisen, our Marketing Specialist Ricardo Frohmader had developed procedures for prequalifying actual or potential receivers--first by accessing independent industry sources such as the Blue Book and the Red Book, second by checking credit references through Dun & Bradstreet, and third by obtaining up-to-date trade references (particularly from other producers from within the region who had used them recently).

Over time, this led to a "recommended" list, which in no case included less than three receivers of a particular product, and which was used very selectively. Of course, the screening process also generated adverse information on some companies. In those cases a judgment call was required as to whether to refrain from comment or to advise those who inquired that a serious problem had been detected.

PROEXAG also took a more pro-active stance with the most promising and reputable receivers. Whenever such companies expressed interest in sourcing from the region for the first time, or expressed interest in diversifying

suppliers, source countries or commodities, PROEXAG offered them substantial support and facilitation. Our first step was usually to develop a shortlist of potential suppliers, directly handle initial exploratory contacts, then arrange an itinerary of field visits in which our team would usually participate. If a potential deal arose, we would stay at arms-length unless asked to participate directly. If the negotiations reached closure, we would then revert to a monitoring role until or unless serious problems arose, at which point we sometimes served as a friendly mediator.

A partial, but illustrative list of companies that received this type of assistance follows:

Lindemann Produce	Dalgaty Produce
Sunworld International	S & H Foods
Southern Rainbow Corp.	NT Gargiulo
CFX/La Fleurette	Ben Litowich & Sons
D. & E. Williams	Mex y Can Produce
Couture Farms	Vendome/Vie de France
R.L. Wheatley & Sons	Seiyu, Ltd.
FRU-VEG Sales	Hanover Brands
Fresh Western Marketing	The Tupman Thurlow Co. Inc.
Pandol Brothers	The Vestey Group
Kings Supermarkets	Tavilla Marketing
C.H. Robinson	Tavilla Sales Co. of Los Angeles
DOLE Fresh Produce	Del Monte Tropical Fruit Co.
The Fyffes Group, Ltd.	Chiquita Tropical Produce
Nissho Iwai Corporation	

Receivers such as these--even those that had had many years of experience in sourcing--were always appreciative of the time and effort they saved, as well as the risks avoided, by availing themselves of PROEXAG's help. The growers and exporters also valued our team's guidance in choosing which company to work with and in structuring deals.

The results are evident from the "List of Deals Made" in annex E, which demonstrates that our "deal facilitation and support"--not just the deal-making itself but also the technical assistance we provided in production, post-harvest and transport matters--made a significant contribution to increased exports from the region.

4. Diversification of Geographic Markets

Throughout the project, the PROEXAG team concentrated on the U.S. market because of its size and nearness to Central America, and because within that market there was ample room for diversification of receivers and end-users, and also for increasing income and/or lowering risk.

Under PROEXAG we also set up a mechanism for exploring and pursuing opportunities in Europe by contracting Francisco Stargardter to represent us in Europe. His activities included (1) scoping out new marketing possibilities; (2) identifying and pre-qualifying receivers; (3) examining quality and condition of arrivals; (4) trouble-shooting, and (5) monitoring and reporting on changing trends.

PROEXAG also spent substantial time and money gathering, organizing and presenting information on the Japanese market for horticultural products, its marketing system and regulatory environment. Our first action was to send short-term consultant Mary Quinlan to Japan on a reconnaissance trip. That trip, plus her extensive follow-up actions, generated quite a complete overview of how the Japanese system functions and what opportunities might make sense for Central America. Although a government-to-government agreement will be required before even fruitfly-free crops can enter Japan from Central America, interest is now rising in one multinational company to push for more open admissibility for fruit from the region, one of the major Japanese trading companies (Nishho Iwai) has expressed interest in several products, and the largest supermarket chain (Seiyu) in Japan has begun sending buyers to Central America to examine product quality.

5. Identification and Pursuit of Niche and Specialty Markets

PROEXAG's main activities in this area included: (1) exploration, analysis and consciousness-raising about organically-grown crops; (2) limited commercial trials with several specialty cut flowers (e.g. proteas, colored callas), specialty vegetables (e.g. bitter melon, edomame, sugarsnap peas); and (3) information collection and preliminary analysis of the feasibility of promoting exotic fruits (e.g. rambutan, lychee, langson, mangosteen, pitahaya) during a second-phase project.

6. Increases in Value-added Product Forms

In the case of french beans, baby vegetables and snowpeas, however, some progress was made toward increasing local value-added. After recognized early on that the main obstacles to increased consumption of these commodities were their extreme perishability and the lack of consumer-friendly packaging which would allow for a reasonable shelf life in supermarkets, PROEXAG encouraged the 4 Pines Cooperative and Fru-Veg Sales to consider the possibility of introducing consumer packs that would help remedy these problems. Happily, they did so, thereby establishing on their own initiative a new product line that has proved to be successful in Publix, a large supermarket chain in Southeastern United States.

PROEXAG also worked intermittently with the fruit and vegetable processing industry in Central America. For example, we carried out a reconnaissance survey on exotic fruit processing possibilities for Panama, supported another reconnaissance analysis for a vegetable freezing plant in Honduras and a pre-feasibility study for a new freezing plant in Guatemala, financed a full feasibility study for a dehydrated pineapple and banana chip operation in Honduras, provided technical assistance in pest and disease control for cole crops destined for freezing in Guatemala, and helped facilitate the first test shipment of frozen broccoli to Japan.

Finally, toward the end of the project, we arranged and sponsored a pilot project aimed at testing the viability of producing immature green soybean (edomame) to be sold frozen in the pod to Japan. Having discovered that edomame is imported in great quantities into Japan from Taiwan for use as a snack food, we purchased a small quantity of the most promising seed varieties from Taiwan and Japan, arranged for them to be tested at FHIA in Honduras and by freezing plants in Guatemala and El Salvador, and then

facilitated visits by a Japanese trading company and a major Japanese food chain. Results were good enough to cause several of the cooperating companies to move on to commercial production aimed for the export market.

Although we had hoped to do more work in the area of value-added processing, the absence of a specialist in the processing of horticultural crops within the team prevented PROEXAG from seriously pursuing many other promising possibilities.

INDUSTRY DEVELOPMENT PRIORITIES

1. Improved Access to and Management of Technical Information

Our first activity in this area, which really continued throughout the project, was to systematically search for and evaluate all possible sources of relevant information--whether hardcopy or electronic, formal or informal.

Once a source had been identified and evaluated, those that were judged to be sufficiently accurate, timely and cost/beneficial were accessed or procured. This sometimes meant just buying a publication, as in the case of The Packer, or subscribing to a data service, as in the case of PRONET, but it could also mean establishing a working relationship with key informants at the source, as was the case with certain USDA offices, or tapping into electronic libraries such as USDA's AGRICOLA, FAO's AGRIS, and CAB Abstracts.

As the acquisition process continued, it became necessary to organize a system for storing and retrieving the many information products on hand. So we proceeded to set up a simple library in the PROEXAG offices, organized by major sections: crops (e.g. asparagus), disciplines (e.g. post-harvest physiology), grades and standards, themes (e.g. export/import procedures), competing countries (e.g. Mexico), and target markets (e.g. Canada). The library was designed to serve client grower/shippers, the staff of our counterpart export support organizations, researchers, and the PROEXAG team itself.

It quickly became obvious, however, that a separate file-based system was needed to store enterprise-specific information that was confidential and to keep key items not formally published from getting lost.

Early on in the project, PROEXAG also began a continuous process of acquiring and disseminating key documents and datasets to our counterpart organizations. Numerous books, brochures, and reports were purchased for each entity and delivered to them to ensure that they would have access to core materials on the horticultural industry. Every 10-15 days, an average of several pounds of xeroxed copies of articles, statistics, trip reports, contact reports and other "grey" literature was sent to each entity.

In addition, PROEXAG provided help in organizing and managing the documentation centers of each counterpart entity. The first pre-condition to achieving this goal was to increase the number and capacity of computer systems available for their use, so the project purchased and installed at least one up-to-date system for each counterpart organization, and encouraged them to acquire more with their own resources. Whereas at the start of the project they had 23 computer systems in total, by the end of the project they had

156 systems.

Since a second pre-condition to better management of information was a higher level of computer literacy among staff, from 1987 onward our expert in Computer Use and Information Systems trained numerous counterpart staffers in basic computer operation as well as key software packages such as WordPerfect 5.1 (introducing the Spanish version to Central America for the first time, in collaboration with the WordPerfect Corporation), Lotus 1-2-3, dBase III, PARADOX, and PlanPerfect. Over the life of the project the number of computer users rose from 13 to 81, a good indicator of progress.

Having upgraded both computer systems and staff capabilities, the next step was to improve information management itself. With that purpose in mind, PROEXAG's Dr. Bruce Brower introduced to the region in 1989 a specialized library management software package called MICRODIS, which had been developed by AID for small documentation centers in LDCs.

2. Timely Access to and Improved Management of Market Information

One of the original motivations for the PROEXAG Project was the perception that the lack of market information available to actual and potential exporters presented a formidable obstacle to the development of NTAE crops, so a major objective of the project was to enhance access to and management of market information.

a. Prices

Information on prices is of critical importance to both growers and exporters. For those who were already in the business of exporting, at the beginning of the project the telephone was by far the most common means of obtaining up-to-date information from receivers, with the telex machine a distant second. But early on in the project, fax machines began dropping in price, and therefore more common in the produce industry, a phenomenon PROEXAG encouraged by donating fax machines to our counterpart organizations. We also encouraged greater use of electronic data sources, especially PRONET and AGRIDATA, by financing the first year's subscription for our counterpart organizations and by bringing AGRIDATA management and technical staff to the region.

But for analysts, promoters, and development professionals, as well as for people who were trying to decide whether to enter the export business for the first time or to change crops, what was needed was not daily, up-to-date price information but rather historical trends. Since this type of information was not being formally tracked at the start of the project for the crops of most interest to the Central American region, starting in 1987 the project co-funded with the Florida Department of Agriculture and USDA/AMS' Market News Service a new Miami office established to report on prices of selected NTAE crops. During the export season--October through May approximately--the Miami MNS Office began sending a faxed report, first to the PROEXAG office in Guatemala, then to each counterpart entity that subscribed, and over time, to a number of individual exporters and receivers as well.

In order to make the best possible use of this price data, as well as information gathered by USDA's other reporting offices in major U.S. markets,

PROEXAG then went on to design a computerized Commodity Price Database. The CPD not only helped preserve the reported data over time but also enabled us to sort (by market, commodity, size, origin, sale unit, currency, quality, condition, etc.), analyze (e.g. calculate medians) and provide custom reports (in tabular or graph form). By the end of the project, the CPD covered some 20 crops and 8 target markets within the United States, and was being used regularly by all of our counterpart entities.

Since Central American product is also shipped to Canada and Europe, we also sought out price data on those two countries, but on a more selective, as needed basis. In the case of Canada, by 1991 USDA had set up jointly with Mexico a new reporting service that provides an excellent overview of all major cities and market areas. In the case of Europe, the principal source we relied on throughout the project was the Geneva-based Market News Service of the U.N. International Trade Centre, although to obtain detailed data we more often relied on a specific search by PROEXAG's European Marketing Representative Francisco Stargardter, based in England.

b. Volumes

PROEXAG staff, counterparts and clients also needed information on volumes, of course. For the U.S. market, the principle sources of this information were all within USDA--the Agricultural Marketing Service, APHIS, the Foreign Agricultural Service, and the Economic Research Service. For the Canadian market, Agriculture Canada was the main source. For Western Europe, the best source of volume data proved to be EUROSTAT, the statistical arm of the European Community.

c. Values

Finally, when the project needed information on the overall value of horticultural trade, we generally relied on the Department of Customs for the United States, and EUROSTAT for Europe.

d. Dissemination

Depending on the nature, urgency, and source of a given request for information, PROEXAG would transmit the data described above to interested parties via telephone, telex, fax, electronic transmission, or storage media.

3. Improved Understanding of and Access to Target Markets

We already described many of PROEXAG training and technical assistance activities aimed at improving understanding of and access to target markets in the marketing subsection above.

The informational activities just described also served to complement those marketing activities. For example, in April of 1990 PROEXAG organized a Market Information Tour to expose information center staff from all our counterpart organizations to the mechanics of market news reporting in Florida, England, France, Switzerland, Belgium and Germany.

PROEXAG also developed several computer-based tools for analyzing large amounts of data and improving decision-making. Our software program COMPEX, for example, was developed to assist planners, analysts and producers in determining what to promote or grow by defining what their landed cost would have had to be to be cost-competitive over the prior three years, given selected combinations of crop, product form, source area, transport route, transport mode, port of entry and terms of sale. PROEXAG's Cost of Production Template, on the other hand, was designed to assist growers to understand their own cost structure as compared with typical costs for that same crop under a given technology.

4. Improved Capacity to Export Successfully and Profitably Over Time

Although the PROEXAG project design correctly assumed that the lack of access to timely and accurate technical and market data was a constraint to the growth of NTAE crops in Central America, the sense of the implementing team from the start of the project was that data in itself was not enough. In our view, the critical scarcity was "know-how"--i.e. understanding how to use technical and marketing information to be successful in producing and exporting perishable crops at a profit. So what we really sought throughout implementation was to enhance the capacity--i.e. analytical and entrepreneurial skills--of clients and counterparts alike to make more effective use of information and to make better decisions in their export activities.

ANNEX E

LIST OF HORTICULTURAL EXPORT DEALS MADE WITH THE ASSISTANCE OF THE NON-TRADITIONAL AGRICULTURAL EXPORT SUPPORT PROJECT (PROEXAG) (1986/87 to 1990/1 SEASONS)

E-1

US COMPANY	ENTREPRENEUR OR COMPANY	COUNTRY	YR. OR CROP SEASON	EST. SALES CIF POE IN \$.000	PRODUCT
1. Lindemann Farms Los Baños, CA	La Aurora	GUA	1986/87	200.0	Honeydew
	Caexi	ES	1987/88	2,150.0	Cantaloupe/ Honeydew
	Fruvex	ES			
	Ausol	ES	1988/89	3,200.0	Cantaloupe/ Honeydew
	Casvel	ES			
	El Rico	ES			
	Montelibano	HON			
	Ucape	PAN			
2. P.A. Buffone Inc. Pompano Beach, FLA	Coagroval	HON	1989/90	8,400.0	Cantaloupe/ Honeydew
	Exporpac	CR			
	S.Mansell	NIC	1990/91	6,500.0	Honeydew
	M.Hanon	NIC			
	E.Enríquez	NIC			
	Seve, S.A.	GUA	1987/88	100.0	Okra
	AgroOceanic	GUA	1989	800.0	Snopeas
	AgroOceanic	GUA	1990	800.0	Snopeas

US COMPANY	ENTREPRENEUR OR COMPANY	COUNTRY	YR. OR CROP SEASON	EST. SALES CIF POE IN \$.000	PRODUCT
3. Steve Miller Co. Thomasville, GA	Mogo, S.A.	GUA	1987/88	125.0	Cucumbers Hard squash
4. International Multifoods/COEXPORT Chicago, IL	Mogo, S.A. Transcafé	GUA GUA	1988/89 1988/89	150.0 150.0	Cucumbers Snopeas
5. Sunworld Int. Coachella, CA	Anita, S.A.	ES	1988/89	22.0	Seedless Watermelon
	Montelibano Tony's Melons Agropac La Aurora	HON ES ES GUA	1989/90	350.0	
	Cristiani Burkhardt Agro Dos Valles Exporpac F. Apestegui	GUA GUA CR CR	1990/91	441.0	

US COMPANY	ENTREPRENEUR OR COMPANY	COUNTRY	YR. OR CROP SEASON	EST. SALES CIF POE IN \$.000	PRODUCT
6. D & E Williams Ventura, CA	Agrop. Los Pinos	GUA	1988/89	800.0	Snopeas, baby vegetables, french beans and blackberries
	Agrop. Los Pinos ²	GUA	1989/90	2,100.0	
	Agrop. Los Pinos	GUA	1990/91	1,600.0	
7. Tavilla Marketing Tampa, FLA	Fruvex	ES	1988/89	500.0	Honeydews
	AgroOceanic	GUA	1989	540.0	Snopeas
			1990	540.0	
8. CFX/La Fleurette MI	Finca Pamputik	GUA	1989	150.0	Roses
			1990	1,500.0 ¹	Roses/Strelitzia
			1991	2,500.0 ¹	Roses/Strelitzia/Callas
	Tropical Splendor ³	GUA	1989/90	1.0 ³	Strelitzia
	Agrinex ³	GUA	1989/90	120.0 ³	Carnations
	Tropiflor ³	GUA	1990/91	200.0 ³	Roses

US COMPANY	ENTREPRENEUR OR COMPANY	COUNTRY	YR. OR CROP SEASON	EST. SALES CIF POE IN \$.000	PRODUCT
CFX/La Fleurette (cont.)	Bohemia	GUA	1989/90	25.0 ¹	Strelitzia
9. Flower Trading Corp. Miami, FLA	San Sebastián	GUA	1988/91	710.0 ³	Roses
	Multicrops	GUA	1991	50.0 ³	Roses
10. Southern Rainbow Corp. Miami, FLA	Tropiflor	GUA	1990	27.6	Roses
			1991	130.0	Roses
	Agrinex	GUA		57.5	Carnations
	Rosas del Sur	GUA		6.2	Roses
11. S & H Foods Atlanta, GA	Inexa	GUA	1988/89	40.0	Frozen broccoli/ french beans
	Verdufrex	GUA	1988/89	. ¹⁴	Frozen broccoli
12. Couture Farms Huron, CA	Fca. Magdalena	GUA	1988/91	15.0	Asparagus
	Fca. Candelaria	GUA		217.0	
	Monte Norte	GUA		165.0	

US COMPANY	ENTREPRENEUR OR COMPANY	COUNTRY	YR. OR CROP SEASON	EST. SALES CIF POE IN \$.000	PRODUCT
Couture Farms (cont.)	M. Alvarado	GUA		50.0	
	Flora Plus	GUA	1989/90	13.0	Asparagus
	Xilaxito	GUA	1989/91	64.0	Asparagus
	Cutanyrá	GUA		80.0	
	Sanje	GUA		21.0	
	Carmelia	GUA		11.0	
	Delicia	GUA		185.0	
	Monte María	GUA		16.0	
13. Tupman Thurlow Inc. New Rochelle, NY	Delicia	GUA	1991	103.0 ³	Mango purée
14. Alderman Farms Pompano Beach, FLA	Agroforest	GUA	1988	100.0	Snopeas
15. Basico Ltda (Chiquita Guatemala)	Intibucá S.A.	GUA	1987/88	100.0	Honeydew
	" "		1988/89	275.0	"
	" "		1989/90	272.0	"
	" "		1990/91	115.0	"

US COMPANY	ENTREPRENEUR OR COMPANY	COUNTRY	YR. OR CROP SEASON	EST. SALES CIF POE IN \$.000	PRODUCT
16. Chiquita Costa Rica	Finca Tempisque	CR	1988/89	1,000.0	Honeydew
	Ingenio El Viejo				
	Brenes Hnos.				
	Finca Real				
	M. Sibajá F. Apestegui				
17. Transfryos Guatemala City, Gua	J. Breeley		1989/90 1990/91	2,155.0 3,736.0	Honeydew/Cantaloupe
	Various Shippers	GUA ES	1987/88	500.0	Transport of fruits and vegetables overland to Texas and Arizona
		HOND	1988/89	325.0	
			1989/90	300.0	
			1990/91	641.0	

US COMPANY	ENTREPRENEUR OR COMPANY	COUNTRY	YR. OR CROP SEASON	EST. SALES CIF POE IN \$.000	PRODUCT
18. C.H. Robinson/ Hillcrest Sales Medley, FL	Fruvex	ES	1989/90	250.0	Honeydew
	Fruvex	ES	1990/91	400.0	Honeydew/Cantaloupe
19. H.R. Schnell New York, NY	Coop. Cuatro Pinos	GUA	1987	15.0	Specialty Vegetables
20. Tavilla Sales Los Angeles, CA	Tropical Splendor	GUA	1988/89	3.0	Specialty Vegetables
21. Dole Fresh Vegetables Salina, CA	Siesa ⁵		1989	100.0	Snopeas
22. Vie de France New Orleans, LA	Transcafe	GUA	1988/90	300.0	Snopeas/ Specialty Veg.
	Cuatro Pinos	GUA	1990/91	250.0 ³	Snopeas/ Specialty Veg.
23. Vera Products McAllen, Texas	Sid	GUA	1989/91	180.0 ¹	Aloe Vera

US COMPANY	ENTREPRENEUR OR COMPANY	COUNTRY	YR. OR CROP SEASON	EST. SALES CIF POE IN \$.000	PRODUCT
24. American Sun Melon	Various Producers	GUA	1989	25.0	Seedless Watermelon
		ES	1990	50.0	Seed (proprietary variety)
		HOND	1991	175.0	
25. FTK Holland Bleiswijk, Netherlands	Rogama	HOND	1991	30.0	Rambutan
26. Pascual France Paris, France	Rogama	HOND	1991	20.0	Rambutan
27. Wealmoor	Tropical Splendor	GUA	1989/91	1,000.0	Snopeas, sugar snap pea, mini vegetables, asparagus.
28. Tropenfruchtimport Hamburg, Germany	Tropical Splendor	GUA	1989/91	100.0	Snopeas
29. Georges Helfer Paris	Tropical Splendor	GUA	1990	40.0	Snopeas
30. Malet-Azoulay Paris	Citric S.A.	HOND	1990	50.0	Persian Limes

ANNEX F

DEAL PROFILE: LINDEMANN PRODUCE AND CENTRAL AMERICAN MELON EXPORTS

In late 1986, PROEXAG was approached for marketing assistance by a Central American who produced melons in both Guatemala and El Salvador. This grower/shipper was interested in identifying a reputable alternative receiver with strength in the West and Midwest who could complement his established receivers on the East Coast, since he felt they were already overloaded and not able to handle his planned expansion in exports. PROEXAG's marketing specialist responded immediately by developing a short list of reliable firms with these capabilities.

One of the companies on this list was Lindemann Produce, a family-owned agribusiness specializing in melons that was based in Los Banos, California in the San Joaquin Valley. Among the top five packer/shippers of cantaloupe and honeydew in the U.S., and the largest shipper (approximately 6 million cartons per year), Lindemann sells to a customer base of about 2000 companies including wholesalers, retail outlets and foodservice. Although Lindemann does not offer an exclusive product, it does sell under a respected label and has a proven ability to sell melons.

Prior to 1986, the company was a domestic supplier as well as an exporter to Japan, but had never imported melons. As such it was a seasonal shipper, beginning in Arizona with May harvests and moving back to California for the summer, before finishing up in the fall in Arizona again. The company wanted to have a year-round presence in the marketplace, both to expand its market penetration and to make better use of key personnel--especially its sales force and technicians--who were available year-round but were being underutilized due to the seasonality of their existing business.

In 1986, when PROEXAG's advisors initiated contact with Lindemann's owners, the company's only offshore experiences (in Mexico) had been unsatisfactory, they had little familiarity with doing business outside the U.S., and they had no offshore staff or infrastructure.

After the Central American melon grower/shipper mentioned above exporter contacted Lindemann Farms, an initial deal was made. That led to some 20,000 boxes of melons getting shipped during the 1986-87 season. Total sales volume was estimated at \$200,000.

Then in 1987, PROEXAG advisors organized a training course in California for 16 Central American packinghouse managers. The program was timed to coincide with the North American harvest and peak season, which is counterseasonal to Central American production. The orientation included visits to the Los Angeles wholesale market, visits to retail outlets for quality inspection, and training in grading, sorting, and packing of melons. Lindemann participated as a collaborator in the training and received the Central Americans on their facilities. Several of the participants in this course--the Panamanian firm UCAPE, the Salvadoran firm El Rico, S.A., and the Honduran firm Agropecuaria Montelibano--eventually marketed fruit through Lindemann thanks to the contact established through this event.

Then in the Fall of 1987, PROEXAG's marketing advisor organized a trip to the lower Rio Grande Valley by a group of Salvadoran melon growers. The trip was made in conjunction with efforts to open the Mexican overland route to markets in the U.S., offering an alternative to the traditional ocean route into South Florida ports. George Lindemann joined the group in McAllen, Texas and met three more producers from El Salvador. One signed a contract for the 1987-88 season.

Lindemann Produce was also among the first U.S. companies to recognize the strategic importance of accessing ports of entry other than South Florida. During the 1987-88 season, Lindemann became one of the main users of the Mexican overland route for melons from El Salvador and Guatemala, pioneering the entry of fruit through Nogales, and strongly reinforcing the use of McAllen as an alternate port of entry.

Also in conjunction with PROEXAG, Lindemann's sales staff toured facilities at the port of New Orleans, and trial shipments of melons were conducted. Although the physical infrastructure and services surrounding the port were good, three problems with New Orleans were evident: (a) higher ocean transportation costs relative to landing the same product in south Florida; (b) the lack of sufficient volume and diversity of local or imported commodities to combine with the melons to create "mixer loads"; and (c) the absence of a well-established receiver community able to handle Central American product.

During its second import season (1987-88), Lindemann expanded its Central American import volume to 195,000 boxes of melons, with an estimated port-of-entry value of \$2.15 million. Contacts and relationships with Central Americans were further strengthened following the season with a trip to California organized by El Salvador's export organization FUSADES. Additional Salvadoran growers participated, and several new relationships were created.

Over the 1988-89 season, its third year in the importing business, Lindemann reached a volume of 360,000 cartons, with an estimated value of \$3.2 million. PROEXAG helped facilitate contacts with additional growers, thereby establishing supply from four countries: Guatemala, El Salvador, Costa Rica, and Panama.

By the fourth year (the 1989-90 season), Lindemann Farms had expanded its initial Central American imports substantially. Starting in 1987 with just 20,000 boxes shipped by one supplier, by 1990 its melon deal had expanded to some 635,000 cartons with an estimated value of \$8.4 million, coming from 12 companies in five countries:

- COSTA RICA--Exporpac
- EL SALVADOR--Caexi, Casvel, Fruvex, Ausol, El Rico, Capeco
- GUATEMALA--La Aurora
- HONDURAS--Agropecuaria Montelibano, Coagroval
- PANAMA-Ucape

Lindemann's experience to that point in Central America led it to two important conclusions about doing offshore melon deals:

First, that technology transfer in practical matters is a continuing and ongoing need. A postharvest handling and quality control team was put in place in El Salvador by Lindemann during January/February of 1990. The team provided advice on picking, grading, sizing, packing and cooling. FUSADES underwrote two-thirds of the cost, which was a tremendous incentive that enabled the importer to concentrate on quality improvements.

Second, that action was needed to improve its ability to receive and manage produce at various ports of entry. While maintaining its sales base in California, it hired agents or deployed employees to McAllen, Texas and Pompano Beach, Florida. Their function was to monitor product arrival condition, which can tend to be quite variable, and thereby help in setting prices and determining sales destination. Pre-cooling conditions in El Salvador were less than optimal, and container malfunction a frequent occurrence thereby making it vital that each arrival be inspected and feedback provided to the sales department. Fair quality melons must be disposed of quickly, and as close to the port of entry as possible. If shipped to a distant market, rejection is ensured and grower returns are diminished.

Both of these actions, which shifted the responsibility to provide quality control and technical assistance to the importer, helped relieve the pressure on PROEXAG advisors to provide postharvest handling advice and to monitor the condition of product arrivals. As early as the second season, Lindemann began to provide its own people on an as-needed basis to work with growers in resolving production, harvesting, and packing problems. Because of the company's unique position as a grower/shipper (in contrast to strictly a sales agent), it was able to supply its own technicians, or to identify other experts to assist. As their import business grew and became an increasingly important part of their year-round ability to supply melons, enlightened self-interest, i.e. getting fruit to market in the best possible condition, and selling it at the best price realistically obtainable, served as the catalyst to important services being provided to the region's shippers by their importers.

During the 1990-91 season, Lindemann expanded its volume to 750,000 boxes, which were worth an estimated \$6.5 million in sales. It also expanded its sourcing from five to six Central American countries, adding Nicaragua after PROEXAG had brought a Lindemann representative to a September 1990 workshop in Managua organized by PROEXAG and APENN for prospective nontraditional agricultural exporters. After that conference, Lindemann made arrangements with three farms to supply honeydews. Technical assistance was provided by PROEXAG, a U.S. melon production specialist separately contracted by the farms to provide on-site expertise, and Lindemann. PROEXAG also provided guidance to Lindemann and the growers in transportation matters.

In 1991 isolated cases of salmonella were traced to Honduran and U.S. domestic melons. Although neither of these incidents involved Lindemann or its suppliers, it served as the basis for U.S. importers of Central American melons largely at Lindemann's initiative to form an alliance which effectively implemented a quality control program in Central America in 1991.

During the current 1991-92 season, Lindemann expects to receive 1.1 million cartons of melons. Due to a series of production problems encountered by one of their Salvadoran suppliers, total imports for the season which will finish later this month are estimated to be approximately 950,000 cartons of

cantaloupes and honeydews from six countries (Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica, and Panama) with an estimated sales value of \$11 million.

At this point in time, the Central American import deal represents close to one-third of Lindemann's \$38 million business, and has made Lindemann perhaps the only year-round supplier of melons in the U.S.

Cognizant of the various costs associated with the production and distribution of melons, Lindemann has initiated a number of activities aimed at reducing costs, improving product quality, and increasing returns to growers:

- provision of on-site technical assistance locally in Central America in harvesting, packing, and shipping. Lindemann has had as many as 10 technicians in Central America. In some cases suggested improvements, e.g., modifications to a roller in a Honduran packhouse were made overnight, resulting in improved efficiencies.
- introduction of superior U.S.- produced cartons to replace lesser quality Central American cartons.
- continued training, at the company's California facility, of Central American suppliers who are under contract with Lindemann
- encouragement of freight distribution among multiple ocean carriers (independents and conference)
- increased involvement in rate and space negotiations with the commercial carriers and third-party carriage with the multinationals;
- exploration of alternate ports of entry, e.g., Tampa and Philadelphia;

In addition to having significantly expanded Lindemann's business since 1986, the Central American experience has had some other positive effects:

- the company and its staff are now more global in their perspective. Having coped with Central American problems Lindemann is well-positioned to take on new experiences elsewhere;
- two-way technology transfer, i.e. Lindemann has identified through its Central American suppliers new sources of technologies and applied these to its domestic operations, e.g., an Italian-made planter.

Several other developments are contemplated for the 1992-93 season. Volumes are projected at approximately 1.5 million, to be sourced only from Central American suppliers who are as quality-minded as Lindemann Produce. The company also plans to further explore the possibility of supplying the European market from Central America.

And at the same time, having mastered off-shore sourcing through its Central American deals, Lindemann Produce also intends to source from other countries. Recognizing that Mexico has a significant transportation advantage over Central America, and its quality is improving, Lindemann will again try to source melons from Mexico. And the company may look to Ecuador to provide additional supplies during the months of November and December.

ANNEX G

**PROEXAG Project
Financial Summary 1986-1991**

Contract Number: 596-0108-C-00-6060

Appropriation Number: 72-1161021

Obligated Amount: \$8,186,254

Life of the Project: September 30, 1986 - September 29, 1991

MAJOR LINE ITEM	LOP BUDGET (to date)	Actual Exp. Yr I	Actual Exp. Yr II	Actual Exp. Yr III	Actual Exp. Yr IV	Actual Exp. Yr V	Closeout Period Oct 1, 1991 through Nov 30, 1991	Total Expended*	REMAINDER BUDGET*
		Oct 1986 through Sept 1987	Oct 1987 through Sept 1988	Oct 1988 through Sept 1989	Oct 1989 through Sept 1990	Oct 1990 through Sept 1991			
Salaries	1,619,532	260,603.99	292,764.64	306,424.30	384,729.75	376,633.30	1,100.00	1,622,255.98	(2,723.98)
Fringe	337,629	57,906.36	35,744.04	50,201.13	115,179.14	79,036.18	242.33	338,309.18	(680.18)
Overhead	1,079,143	180,460.28	203,677.33	194,303.17	282,757.50	216,505.98	809.42	1,078,513.68	629.32
Travel & Transportation	554,429	145,735.29	87,628.35	114,144.21	102,050.02	78,825.56	1,078.71	529,462.14	24,966.86
Allowances	944,566	186,610.48	192,256.71	227,508.87	197,657.60	135,773.97	364.14	940,171.77	4,394.23
Other Direct Costs	753,318	95,191.84	178,089.50	147,589.58	175,374.28	152,284.38	4,783.04	753,312.62	5.38
Equipment, Vehicles & Freight	381,017	116,959.56	81,348.86	62,873.12	38,787.68	81,021.35	1,701.29	382,691.86	(1,674.86)
Training	344,262	10,103.33	90,314.29	89,104.11	94,276.93	78,051.99	0.00	361,850.65	(17,588.65)
Subcontracts & Consultants	1,591,054	370,751.88	429,850.30	337,061.65	282,634.82	170,201.95	0.00	1,590,500.60	553.40
SUBTOTAL	7,604,950	1,424,323.01	1,591,674.02	1,529,210.14	1,673,447.72	1,368,334.66	10,078.93	7,597,068.48	7,881.52
General & Administrative	263,290	28,486.45	93,661.40	61,933.02	(680.53)	82,061.96	344.70	265,807.00	(2,517.00)
Fixed Fee	318,014	71,303.31	82,688.27	77,966.01	63,869.41	21,077.13	724.44	317,628.57	385.43
GRAND TOTAL	8,186,254	1,524,112.77	1,768,023.69	1,669,109.17	1,736,636.60	1,471,473.75	11,148.07	8,180,504.05	5,749.95

* Pending submission of the final project closeout invoice. Final figures may vary slightly after date of said invoice.

ANNEX H-1

**HISTORICAL SUMMARY (1983-1990) OF THE VALUE OF FRUIT, VEGETABLE AND
PLANT EXPORTS FROM THE LAC REGION TO THE UNITED STATES,
BY COUNTRY OF ORIGIN**

	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>	Proj. <u>1991</u>	Annual Rate <u>83-91</u>	<u>90-91</u>
CENTRAL AMERICA											
<i>Belize (a)</i>	0.4	4.6	8.3	11.0	11.6	12.0	12.1	15.8	9.8	47.1%	-37.9%
<i>Costa Rica</i>	14.5	21.5	23.6	33.7	41.8	55.0	81.0	90.5	104.9	28.0%	6.5%
<i>El Salvador</i>	2.4	3.2	3.9	4.9	6.8	5.0	5.6	6.3	7.0	14.6%	10.8%
<i>Guatemala</i>	16.0	21.4	22.1	29.5	36.6	37.6	47.9	53.8	53.4	16.2%	-0.9%
<i>Honduras</i>	12.3	15.5	18.5	17.3	28.8	19.9	23.5	23.8	26.2	9.9%	10.3%
<i>Nicaragua (a)</i>	0.2	0.1	0.0	0.0	0.1	0.0	0.0	0.0	1.5	25.6%	36425.0%
<i>Panama</i>	3.9	4.6	7.1	8.4	14.2	11.1	6.5	4.9	9.2	11.4%	86.4%
TOTAL	49.8	70.8	83.5	104.8	139.7	140.6	176.7	203.2	212.0	19.8%	4.3%
CARIBBEAN											
<i>Dominican Republic</i>	33.7	38.9	42.0	45.3	40.9	43.7	46.9	47.8	51.6	5.5%	7.8%
<i>Haiti</i>	4.8	4.9	5.5	5.4	5.9	5.1	6.4	6.5	7.8	6.3%	19.7%
<i>Jamaica</i>	5.7	9.2	13.1	12.7	10.4	10.2	9.0	12.6	13.5	11.5%	7.3%
<i>Antigua</i>	0.001	0.000	0.066	0.560	0.351	0.142	0.118	0.038	0.238	98.2%	526.1%
<i>Dominica</i>	0.001	0.014	0.250	0.692	0.570	0.106	0.050	0.873	0.443	114.2%	-49.2%
<i>Grenada</i>	0.002	0.000	0.007	0.002	0.011	0.011	0.017	0.127	0.054	51.1%	-57.1%
<i>Montserrat</i>	0.000	0.000	0.138	0.104	0.022	0.014	0.006	0.017	0.010	N/A	-41.2%
<i>St. Kitts-Nevis (a)</i>	0.005	0.016	0.059	0.001	0.000	0.000	0.000	0.022	0.036	28.0%	63.6%
<i>St. Lucia (a)</i>	0.025	0.021	0.023	0.003	0.051	0.012	0.031	0.003	2.661	79.2%	88600.0%
<i>St. Vincent-Gren.</i>	0.004	0.002	0.017	0.161	0.025	0.043	0.042	0.085	0.206	63.7%	142.9%
TOTAL	44.2	53.0	61.1	64.9	50.3	59.4	62.6	68.1	76.5	7.1%	12.4%
TOTAL: CBI	94.0	123.8	144.6	169.8	198.0	200.0	239.3	271.3	288.6	15.0%	6.4%
Percent Change		31.7%	16.8%	17.4%	16.6%	1.0%	19.7%	13.4%	6.4%		
SOUTH AMERICA											
<i>Bolivia (a)</i>	0.7	0.8	0.4	0.7	2.7	2.9	5.4	7.3	11.2	41.1%	53.3%
<i>Ecuador</i>	1.2	4.1	11.0	7.5	6.8	10.2	13.7	15.4	21.0	43.3%	35.8%
<i>Peru</i>	11.3	8.8	12.1	11.0	17.1	26.5	25.2	12.5	11.1	-0.2%	-11.2%
TOTAL	13.2	13.7	23.5	19.2	26.6	39.5	44.3	35.2	43.3	16.0%	22.8%
TOTAL: A.I.D. CT	107.2	137.6	168.2	189.0	224.6	239.6	283.6	306.5	331.8	15.2%	8.2%
<i>Chile</i>	126.3	157.3	231.1	246.3	303.9	345.2	346.5	442.1	366.5	14.2%	-17.1%
<i>Colombia</i>	116.7	144.2	137.5	139.1	150.8	183.4	194.9	210.2	220.2	8.7%	8.6%
<i>Mexico</i>	676.7	688.1	715.7	893.2	840.0	875.3	1,099.8	1,437.3	1,130.4	6.6%	-21.4%
TOTAL: OTHERS	919.7	989.5	1,084.3	1,278.5	1,294.6	1,403.8	1,641.2	2,089.6	1,725.1	8.2%	-17.4%
TOTAL: LAC	1,026.9	1,127.1	1,252.5	1,467.5	1,519.2	1,643.4	1,924.8	2,396.1	2,057.0	9.1%	-14.2%
Percent Change		9.8%	11.1%	17.2%	3.5%	8.2%	17.1%	24.5%	-14.2%		

Note: Includes categories 05 plus 29 less 057.3 of the SITC (Revision III).

*Projections are based on January through April 1991 data.

(a) 1991 figure calculated using straight line method.

Source: U.S. Dept. of Commerce, Imports for Consumption, Customs Value.

(US \$ millions)

ANNEX H-2

COMPARISON OF THE VOLUME AND VALUE OF NON-TRADITIONAL AGRICULTURAL CROPS IMPORTED INTO THE UNITED STATES FROM LEADING CBI COUNTRIES IN 1990

<u>Country</u>	<u>Crop</u>	<u>Volume</u> (Metric Tons)	<u>Value</u> (Dollars)
Costa Rica	Cantaloupe	24,400	10,300,000
Honduras	Cantaloupe	41,900	8,000,000
Guatemala	Cantaloupe	16,500	3,800,000
El Salvador	Cantaloupe	4,300	900,000
Dominican Republic	Cantaloupe	6,000	840,000
Costa Rica	Honeydews	9,400	3,500,000
Guatemala	Honeydews	10,600	2,600,000
El Salvador	Honeydews	5,200	1,900,000
Panama	Honeydews	5,400	1,700,000
Honduras	Honeydews	3,100	560,000
Dominican Republic	Honeydews	460	150,000
Costa Rica	Cut Flowers	—	5,900,000
Guatemala	Cut Flowers	—	2,100,000
Jamaica	Cut Flowers	—	700,000
Dominican Republic	Cut Flowers	—	600,000
Guatemala	Snowpeas	8,800	7,300,000
Dominican Republic	Dasheens	13,700	4,100,000
Costa Rica	Dasheens	5,500	2,700,000
Guatemala	Macadamia	290	2,800,000
Costa Rica	Macadamia	220	2,000,000
Costa Rica	Chayote	5,900	2,500,000
Costa Rica	Yams	3,900	1,900,000
Dominican Republic	Yams	830	330,000

<u>Country</u>	<u>Crop</u>	<u>Volume</u> (Metric Tons)	<u>Value</u> (Dollars)
Dominican Republic	Sweet Potato	8,600	1,800,000
Dominican Republic	Jicama/Breadfruit/Pumpkin	4,100	1,100,000
Costa Rica	Jicama/Breadfruit/Pumpkin	1,800	430,000
Honduras	Cucumber	8,600	1,200,000
Costa Rica	Strawberries	370	560,000
Guatemala	Strawberries	550	530,000
Guatemala	Melons (unclassified)	1,400	1,000,000
Dominican Republic	Oranges	3,700	1,000,000
Dominican Republic	Avocado	1,700	820,000
Dominican Republic	Roots and Tubers (others)	1,700	770,000
Honduras	Squash	1,800	300,000
Costa Rica	Squash	740	200,000
Panama	Squash	540	120,000
Honduras	Watermelons	2,800	310,000
Costa Rica	Watermelons	1,000	230,000
Dominican Republic	Tomato	1,400	530,000
Dominican Republic	Pigeon Peas	480	500,000
El Salvador	Limes	200	180,000
Costa Rica	Limes	280	170,000
Honduras	Limes	540	120,000

<u>Country</u>	<u>Crop</u>	<u>Volume</u> (Metric Tons)	<u>Value</u> (Dollars)
Dominican Republic	Peppers	240	130,000
Honduras	Peppers	60	100,000
Guatemala	Onions	1,000	150,000
Guatemala	Celery	840	140,000
Costa Rica	Cabbage	70	140,000
Dominican Republic	Grapefruit	400	120,000

² Excludes bananas, plantains, pineapples, and ornamentals.
Includes only fresh horticultural products with production value over \$100,000.
Substantial volume/value of frozen NTAE crops come from Guatemala and El Salvador,
including: broccoli, cowpeas, okra, Brussels sprouts, cauliflower, lima beans, and
strawberries.

Source: USDA

ANNEX H-3

HISTORICAL SUMMARY (1980-1989) OF THE ESTIMATED VALUE OF NON-TRADITIONAL AGRICULTURAL PRODUCTS EXPORTED FROM CENTRAL AMERICA TO ALL MARKETS, BY COUNTRY OF ORIGIN

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Costa Rica	42.7	45.0	23.1	36.5	55.3	47.6	64.8	84.4	112.1	138.0
El Salvador	13.1	13.0	5.0	5.3	10.8	15.8	12.4	10.2	13.1	11.4
Guatemala	72.7	76.0	77.3	64.7	84.5	74.8	70.0	89.4	97.0	106.1
Honduras	41.9	44.9	42.7	59.3	63.4	60.3	57.0	64.7	64.9	53.5
Nicaragua	7.2	9.5	6.8	12.4	13.6	11.5	4.1	6.6	6.2	6.3
Panama	3.7	2.8	3.3	2.9	3.0	6.8	8.1	13.5	10.3	9.6
total	181.3	191.2	158.2	181.1	230.6	216.8	216.4	268.8	303.6	324.9

Source: Kaimowitz, D. "Prioridades de Investigacion y Apoyo Tecnico para las Exportaciones Agricolas No Tradicionales". IICA, San Jose, CR, 1992.

ANNEX H-4

HISTORICAL SUMMARY (1983-1990) OF THE VOLUME OF CENTRAL AMERICAN
PRODUCE EXPORTS TO THE U.S., BY COUNTRY OF ORIGIN

VOLUMES OF CENTRAL AMERICAN PRODUCE EXPORTS TO U.S.

Commodity Shipments through a Seven-Year Period

By Country and Commodity

Amounts are Shown in Units of 1,000 CWT

USDA Summary Report Fresh Fruit & Vegetable Shipments

FVAS-4 Calendar Year

Central America

Commodity	1983	1984	1985	1986	1987	1988	1989	1990	Total
Asparagus							1	1	2
Beans			1	1		5	2	1	10
Broccoli				1			6	3	10
Cabbage		12		1				2	15
Cantaloups	43	44	161	238	469	737	1,407	1,928	5,087
Cauliflower	2		11	6	3	5			27
Celery		1	16	30	79	30	29	18	203
Cucumbers	15	16	55	38	33	61	145	202	565
Eggplant							1		1
Escarole-Endive							4	4	8
Garlic							1	2	3
Lettuce, Iceberg			4		3	3			10
Lemons				1					1
Limes	6	12	9	16	13	20	8	23	107
Misc. Tropical F&V						195	280	381	856
Mixed-Misc. Melons	141	277	236	511	727	543	821	746	4,002
Mangoes			6	2					8
Okra	10	20	19	16	20	74	2	2	163
Onions Dry								25	25
Onions, Green				9	20	21	42		92
Papayas						1	1		2
Peas*	35	45	50	79	108	125	161	196	799
Peppers, Bell					1				1
Pineapples	754	585	1,373	1,303	1,475	1,483	1,494	1,530	9,997
Plantains						237	274	151	662
Squash			7	10	27	26	34	69	173
Strawberries				4	14	25	41	19	103
Tomatoes		1			1	1	3	7	13
Watermelons	1	6	41	173	110	37	71	99	538
Totals	1,007	1,019	1,989	2,439	3,103	3,629	4,827	5,408	18,073

* Other than Green

** Mixed-Misc. Melons includes Honeydeus

(Separate Honeydev Stat given above)

ANNEX H-5

**HISTORICAL SUMMARY (1986-1990) OF THE VALUE OF U.S. IMPORTS
OF FRESH CUT FLOWERS, BY COUNTRY OF ORIGIN**

(\$1,000 dollars)

Country of Origin	1986	1987	1988	1989	1990
Colombia.....	136,933	142,593	175,572	186,595	199,139
Netherlands.....	60,657	62,851	63,571	67,660	63,371
Mexico.....	6,122	5,098	7,275	9,978	13,438
Costa Rica.....	4,105	4,988	5,936	8,824	9,195
Ecuador.....	1,216	2,629	3,884	7,222	9,597
Peru.....	2,883	1,980	2,762	4,181	3,624
Thailand.....	1,694	2,292	2,798	4,017	4,017
Canada.....	3,386	4,391	6,110	3,759	3,830
Israel.....	6,830	5,268	3,907	3,196	1,966
Guatemala.....	1,242	1,787	2,111	2,591	3,316
Taiwan.....	11	30	5	2,423	826
Jamaica.....	414	879	686	956	1,230
Others.....	9,402	8,823	8,888	14,252	12,697
Total.....	234,895	243,609	283,505	315,654	326,246

Source: U.S. Department of Commerce, Bureau of Census.

(Emanuel McNeil, 202-447-2083)

ANNEX H-6

HISTORICAL SUMMARY (1986-1990) OF THE VOLUME OF U.S. IMPORTS
OF FRESH CUT FLOWERS, BY COUNTRY OF ORIGIN
(1,000 blooms)

Country of Origin	1986	1987	1988	1989	1990
Roses					
Colombia.....	160,491	199,604	213,199	221,593	293,171
Mexico.....	15,196	17,538	25,861	33,565	47,880
Ecuador.....	7,221	13,126	16,791	26,238	41,763
Netherlands.....	11,581	10,489	9,730	11,606	12,660
Guatemala.....	6,872	7,722	9,285	9,365	16,497
Costa Rica.....	5,605	6,890	5,767	4,074	5,447
Israel.....	2,863	1,543	706	NA	NA
Others.....	7,193	6,937	5,830	7,739	8,844
Sub-Total.....	217,022	263,849	287,169	314,180	426,262
Carnations (standard)					
Colombia.....	779,705	866,586	891,846	766,530	1,015,760
Mexico.....	20,632	20,109	17,817	18,493	13,784
Ecuador.....	7,192	9,751	8,103	11,670	13,775
Peru.....	679	907	5,228	6,397	3,489
Netherlands.....	7,564	6,483	3,237	2,609	2,195
Costa Rica.....	7,919	5,897	2,093	NA	1,517
Others.....	13,523	6,979	4,837	11,473	8,604
Sub-Total.....	837,214	916,712	933,161	817,172	1,059,116
Other Cut Flowers					
Pompon Chry. 2/.....	455,802	466,590	508,278	427,128	523,776
Chamaedorea 2/.....	359,219	456,925	411,250	320,150	332,825
Carnations, Mina. 2/....	170,916	220,644	281,004	283,860	320,700
Alstroemeria.....	57,571	66,351	81,470	69,088	80,517
Tulips.....	59,036	55,525	38,594	68,478	69,178
Statice 2/.....	48,033	54,243	57,942	68,470	73,070
Gypsophila 2/.....	19,509	26,341	36,477	70,950	88,730
Lilies.....	32,629	32,775	31,587	34,381	37,366
Freesia.....	34,294	32,911	31,008	30,716	28,244
Gerbera.....	18,216	30,945	32,620	30,266	31,358
Iris.....	25,872	26,279	25,059	29,038	26,513
Chrysanthemums.....	26,817	24,445	26,097	27,978	32,317
Daisies.....	19,717	20,258	20,157	25,575	19,038
Misc. Ferns/Greens.....	8,745	12,243	6,626	5,657	11,361
Gladioli.....	3,721	3,987	3,155	3,730	4,943
Orchids-Cymbid.(blooms):	2,210	3,720	5,297	3,631	4,967
Orchids-Others.....	14,595	14,132	12,867	22,876	23,950
Other Ornamentals 3/....	104,040	126,007	146,616	199,699	258,306
Sub-Total.....	1,460,942	1,674,321	1,756,104	1,721,671	1,967,159
TOTAL.....	2,515,178	2,854,882	2,976,434	2,853,023	3,452,537

NA=Not Available 1/ Does not include imports from Canada. 2/ Revised from bunches to blooms (same as stems). 3/ Includes leatherleaf and lilac.

SOURCE: Plant Protection and Quarantine Offices, USDA, Federal-State Market News Service.